The Builder.

VOL. XXXVI. No. 1872. SATURDAY, DECEMBER 21, 1873.

ILLUSTRATIONS.

Christ Church, Neuilly, France.—M. Leroux, Architect 1330
The Frauenkirche, Nuremberg 1331

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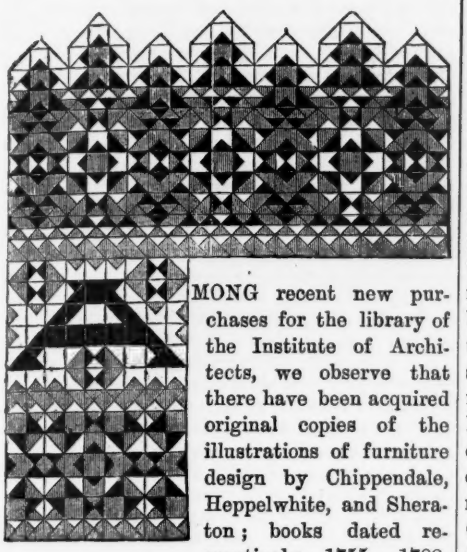
Three Furniture-Books.



AMONG recent new purchases for the library of the Institute of Architects, we observe that there have been acquired original copies of the illustrations of furniture design by Chippendale, Heppelwhite, and Sheraton; books dated respectively 1755, 1788, and 1801. We were rather surprised to observe, from seeing these entered as recent purchases, that they were not previously among the possessions of the library, for they were all standard books in their day, and have a considerable historical interest, at all events. At present, they will be considered by many to have an interest of a more directly artistic nature, for they represent the original development of the style of furniture which has recently been again brought into fashion, and by the numerous votaries of the present fashion would no doubt be regarded as so many Sybilline books of the furniture-designer and decorator, not to be mentioned without a very considerable respect and veneration, as the authorities for the true typical and normal forms of furniture design. As we are not under the influence of fashion, but rather have studiously endeavoured always to contemplate its whirligigs from an outside stationary point of criticism, we can view these sacred books with an impartial judgment; and it may be worth while to look through them in this unbiassed spirit, and consider what they are really worth to designers of the present day.

Chippendale's book is a handsome folio, got up in the solid and permanent-looking style in which books were brought out when they were not so numerous as now; the letterpress in large clear type, the paper thick, the diagrams executed with the best skill available, probably, at the date of publication. It bears the title, "The Gentleman and Cabinet-maker's Director: a Collection of Designs in Gothic, Chinese, and Modern Taste." The title is odd both in the rather ungrammatical construction of the first sentence, and in the prominence given to the "Gothic" and "Chinese" designs in placing them first in order, though in fact the designs so termed are a small portion of the whole, the greater part of which is professedly in "modern" taste; *i.e.*, the taste borrowed from the French of the previous generation and imported with some little modification into this country. Chippendale obviously thought he was doing a work of considerable importance to the world at large in bringing out his book, and sets about it in a spirit and with a dignity becoming so important a task. "I have," he observes, "been encouraged to begin and to carry on this work not only (as the puff in the play-bill says) by persons of distinction, but of eminent taste for performances of this sort, who have upon many occasions expressed some surprise and regret that an art capable of so much perfection and refinement should be executed with so little propriety and elegance." Though he owns to "patrons" (the inevitable accompaniment of a new book in the last century), he is careful thus to let the reader know that he values them for their taste, not for their rank, according to the proper spirit of an artist. He is also sedulous to maintain the practical suitability of his designs. He has given nothing, he says, that may not be executed by an able workman, though "some of the profession have been diligent enough to represent them (especially those after the Gothic and Chinese manner) as so many specious drawings, impossible to be worked off by any mechanic whatsoever." And it may be said in credit to Chippendale's excellence in regard to manufacture, that probably the jealousy here referred to really arose from a dislike to the careful and delicate execution and putting together of the parts which these designs of Chippendale's involved, at least as carried out by himself. His preface, however, deals with more serious matters than these, for he proceeds to lay down the proportions and details of the Five Orders, without a due regard to which no such book of designs could be carried out, as they formed "the very soul and basis" of the art here illustrated. In Chippendale's time the Orders were of course regarded *nem. con.*, as the very soul and basis of all decorative or architectural art whatsoever; indeed, one would hardly be surprised to find they were regarded as the basis of law, or medicine, or any other abstract study, in such reverence were they held. But the amusing part of it is, that after all this parade of them, they hardly play any part in the designs at all; for it is really one point to the credit of Chippendale's work, that whatever its æsthetic faults, it was pure furniture design for the most part, with very little mimicry of architecture imported into it; and in cases where there is something like architectural detail based on "the Orders," it is mostly, considered in an architectural light, very poor, and with no appearance whatever of having proceeded from a detailed and conscientious study of architectural examples.

Even after the Orders are drawn out, however, and described, there is something else to be done before we can get fairly to work with the furniture. Our good Chippendale is most anxious that those who use his book as a text-book for furniture designs should understand the method in which the objects are represented in perspective, not only that they may properly understand his drawings, but that they may be enabled in making their own designs to go and do likewise. To this end, however, he does not go into the general theory of perspective, but he gives successive examples how "to draw a book-case in perspective," "to draw a chair in perspective," as if each object were a special problem in itself, instead of being merely a slightly varied application of the same method. In some of the succeeding drawings, unfortunately, Chippendale's application of his own principles is not much more fortunate in regard to perspective than in regard to the "Orders," for most of his chairs are wrong in the perspective of the legs, the further pair appearing in nearly every case too far from the eye, and improperly foreshortened in their curves.

We come now to the practical part of Chippendale,—the actual designs, commencing with chairs. The characteristic form of these chairs is well known; they are marked by a predominance of curves very carefully and delicately worked out, and requiring both good material and careful workmanship to render the furniture sufficiently strong and durable, in spite of its apparently fragile nature and its weak lines. The general design of the chair-legs, however, is very good, if we put on one side the impropriety of such sinuous lines in the part of the furniture which has most weight to bear, and ought, therefore, to be strongest: the greatest thickness is where it should be, at the juncture with the seat frame, and this juncture is very well managed so as to produce an easy transition from the horizontal line of the seat to the vertical lines of the supports, the leg expanding into a kind of shoulder (or perhaps one should rather say, thigh) at this point. The mistake of nearly all the designs, however, is in over-ornamenting the legs; Chippendale seems to have thought them an opportunity for the display of all kinds of fancies in carving and other ornament; he, indeed, draws nearly every chair with two different or alternative legs, so as to allow a choice; and the result of his over-ornamenting is that all the appearance of strength they might have had in spite of their sinuous lines and thin proportions, is taken away, and they appear flimsy and gimcrack when regarded as supporters of the weight of the chair and its occupier. Among the chairs of his own style on which the author most prided himself, are some which he calls "ribband-back chairs," the meaning of which is merely that the greater portion of the back is formed by open woodwork carved as intertwined ribbands; of one of these he declares that he may say, "without vanity," that it is the best chair he ever saw, "and perhaps the best that ever was made." That the workmanship was such as he might fairly have prided himself upon is probable; but the design is unquestionably weak and unsuitable for its object, and represents a misapplied ingenuity. He goes next to "French chairs," which are mostly more solid in appearance and better designed in the leg, than those of his own favourite model; the majority of these are arm-chairs with one arm only, a variety which has not received much favour, as far as we have observed, at the hands of modern restorers of the furniture of this school, but which is certainly a very elegant and characteristic form of seat, remarkably civilised in appearance, suggesting the easy and unembarrassed lounge in the seat of persons

who are quite at their ease and know how to sit gracefully and not squat formally in the centre of the seat. What Chippendale calls "Gothic" chairs form quite a joke from our present point of view; it is impossible to make out what single detail in them Chippendale imagined to be "Gothic" in character. In fact, to modern eyes they seem to differ little from the style of the other designs; but Chippendale evidently thought there was a marked peculiarity of style in these designs, as he specially calls attention to them as likely to be of use to those who are "not accustomed to that style of work." His Chinese chairs are Chinese chiefly in virtue of a certain amount of open work in the backs and legs rather resembling Chinese pierced ivory work on a large scale. The general shape of these chairs is good; in general better than those of Chippendale's own model.

The four-post beds represented are truly terrible erections, heavy and ponderous, and finished above the tester with great ungainly scrolls. In his library-tables, and other rather light tables, Chippendale is at his best, they are thoroughly suitable for their purpose in design and construction. The "French commode tables," also, illustrated further on, are, indeed, all curves and sinuosities in every direction, but there is consistency and unity of design about them, and the curves seem to grow naturally from one another. But in sideboards Chippendale loses this consistency entirely; he wants to make them solid and ponderous, and then he sticks a bit of filagree in the angle between the legs and the top rail, which has nothing whatever to do with the rest of the design. In one of the designs for a clothes-press this inconsistency of detail is still more flagrant, for we have a solid, heavy, square box, totally unornamented, supported by legs of light, open, carved work. It is curious how persistently he comes back to curves, in each class of article, as the *ne plus ultra* in furniture design. In the plates devoted to library-tables and clothes-presses, he commences in each case with simple square forms and straight lines, such as are really most suitable for woodwork, but in each case the progress to more elaborate designs is marked by an increase of twisted surfaces, till we arrive at the culmination in a thing that is all curves, and nothing else. The bookcases are mostly suitable for their purpose, and are necessarily kept more to straight and upright lines; it may be noticed that they all, without exception, terminate above in a pediment broken in the centre, generally with a small pedestal for placing a bust on: this seems to have been a *sine quâ non* for a bookcase design.

Heppelwhite's "Cabinetmaker's and Upholsterer's Guide," published thirty-three years after Chippendale's work, also commences with chairs, the successful design and manufacture of which has always been one of the chief objects of the cabinetmaker's art. The chair is not only the most indispensable and most frequently used article of sitting-room furniture, but it is also the only one in which it is indispensably necessary to consider its convenience for being easily moved and lifted about, as well as its appearance. It is this fact which makes the chair so characteristic an indication of the society which uses it, in regard to those times at least when the taste and choice indulged in were really those of the society of the day, and not imitated from a former epoch. In this respect the chairs of the last century are peculiarly the furniture of the epoch, suitable to an exclusive society that was polished, refined, and graceful in manners; accustomed to handling fragile things with care and delicacy; mobile and vivacious, and not given to sitting long in one place. The chairs of the period are just suitable for this kind of society: light and easily moved, elegant, but in a rather luxurious and effeminate taste. And Hepplewhite's chairs are models in this way, and superior to Chippendale's. They are less ornamented, and their ornament is more suited to its position; the legs appear more intended to do their work, and the backs are designed in a very suitable and elegant manner. His favourite pattern of a light chair is one in which the back appears as an almost separate design carried upon a prolongation of the hind legs of the chair above the seat: it does not look as if it were meant to bear a heavy person to lean back in it very safely, but then these are not chairs meant for heavy people: these are sprightly conversational chairs, to be easily moved where you will at the convenience of a ceremonial caller who wants only a coign of vantage from which to talk civil nothings for a few minutes. Everything in these chairs is subordinated to the mere provision of an elegant temporary seat; there is no lounging any way in them; all the lines fall away from the seat every way; it is a chair to sit upright and to be witty on, and would contribute nothing to the wishes of that sad young man in Ben Jonson's play, who asks for a seat "to be melancholy upon." Heppelwhite, however, shows a larger pattern of chair with a broad square seat and a wide back, the back formed (so far as design is concerned) by the two hind legs continued up and brought round to meet each other in a curve and then interlaced. This is an admirable chair in regard to design and construction, simple and suitable, strong enough to last for a long time and yet sufficiently light for convenience. It is less to Heppelwhite's credit that he seems to have invented that terrible article, the hall chair, with the high wooden back and flat wooden seat, which in its main features remaineth unto this day in many houses. Indeed, it must have been difficult to ensure any use being made of such an instrument of torture, such as would be sufficient to wear it out in a reasonable time. The backs of these machines are mostly carved in low relief with festoon ornaments, and in one case they represent, with an extravagance of bad taste, the *silhouette* of a funeral urn and its drapery, squeezed flat so as to appear in outline only. Urns seem to have been a little on Heppelwhite's mind, in fact, as he uses them on another page for knife-chests. He is more reasonable and logical when he comes to sofas, and such drawing-room lounges, for there are several types under various names. Of these, the "confidante" is very characteristic, consisting of an ordinary sofa in the centre portion, with the addition of a seat placed angle-wise at each end, so that the person occupying the angle seat can talk to the next occupant of the sofa a little apart, and with faces turned away from the other occupants. It is worth notice that all the sofas are for sitting on merely, there is no sofa for a regular comfortable lying down, such as is in so much request now in the private sitting-rooms even of young men, as well as of ladies. It would seem that society in those days, with all its elegance of *entourage*, was, in fact, much less self-indulgent than at present, and had no provision for regularly lying down, except when one was ill enough to keep in bed.

In the matter of beds, Heppelwhite is again much superior to Chippendale, in that his furniture of this kind is much simpler and less pretentious; but it must be admitted that the more ornamental his beds become, the worse they are in point of design and good taste. In other specimens of bedroom furniture, such as chests of drawers and washing-stands, he is excellent, and it would be difficult to find furniture of this sort more simply, tastefully, and suitably designed for its purpose than some of these articles illustrated here. In some other small varieties of drawing-room and sitting-room furniture he displays also great elegance of design, more particularly in his candle-stands designed in thin branching lines curving easily from a central stem, in a manner far more directly derived from Nature than is usual in the ornamental art of the last century. His forms of girandoles, for carrying lights combined with a mirror fixed against the wall, are also very elegant, though much more artificial and conventional in style. The urn-stand is a pretty little bit of furniture which has passed out of use, now that people no longer care about having their tea hot. Among other articles, Hepplewhite's form of the cellaret, or *garde-de-vin*, is worth notice, as it is much more practical in shape than those generally in use now. It is a circular or octagonal locker supported on legs, and takes the same number of bottles in less space than a square or oblong coffer, besides that it has a characteristic shape and appearance, and cannot be mistaken for anything but what it is.

A study of Heppelwhite's designs leads to the conclusion that he was really much in advance of Chippendale as a designer of furniture, and that the name of the latter has occupied a central place in the estimation of revivers of furniture of the last century, to which it is not fully entitled.

Sheraton brings us to the commencement of the present century. His book, dated 1801, and called "Designs for Household Furniture," shows a marked decadence in taste and in the feeling for consistency of style and design, as compared with Heppelwhite. His mind seems to have been much exercised with the draping of window curtains, the first plates of his work being devoted entirely to designs for festoons and loopings, one of them being described as "a grand design in honour of the immortal Nelson," whose portrait occupies the centre of the window cornice, while a sail with a proper "bolt-rope" in the hem is festooned below it, and ropes and anchors hung in the curtain-folds, while tridents rise to meet them from below. Whatever the vulgarity of the taste displayed, this and the design for "Nelson chairs" in a subsequent page of the book, are very interesting as indications of the place then filled in the public mind by England's beloved naval hero, the favourite especially of the people. Sheraton's furniture is much more solid in proportion than that of his predecessors, it might even be called heavy, though sometimes rich in effect; but the detail is somewhat vulgar, and he is too fond of the continual repetition of certain fancies, such as lion's claws for feet, or at least claws of some kind, for in general they can hardly be said to resemble very much the claws of any living thing. There is a want of consistency in his treatment of different parts of the same object; not more marked, perhaps, than in some of Chippendale's designs, but in a different manner. His sideboard designs, for example, are for the most part heavy; but he discards the solid backing to them, and places an open, light, ornamental railing only as a back to the main shelf, which looks flimsy and unsatisfactory in comparison with the rest of the design. One sideboard, however, is very effective, if a trifle pretentious; the plan of it expands into a three-quarter circle at each of the angles next the room, and over this portion rise two or three tiers of circular shelves around a central stem, which would give opportunity, of course, for a brilliant arrangement of plate or ornamental glass in pyramidal towers, as one may say, flanking the centre of the sideboard; but such a design could only be fitly used in a very large and handsomely furnished room, otherwise it would merely look vulgar and pretentious. The centre of the back of this sideboard, by the way, is occupied by one of those circular convex mirrors which it has been a fashion to revive of late, and which is here really effective, as it would reflect and reinforce the glister of the articles which the sideboard is intended to display. Sheraton is fond of working circles into his design in an unexpected manner. There is one for a sofa, in which the bed of the sofa is stopped by large cylinders, crosswise, at each end, the upper circumference of which form the cushions for the head of the occupant, the lower the *appui* for the legs of the sofa; the centre of each cylinder facing the front being occupied by a griffin's head which carries one end of a series of little festoons that are draped along the front of the sofa from end to end as a decoration. The whole thing is effective, though looking a little too much as if it was meant to be so. Sheraton is also clever and ingenious in his adaptation of a circular section to various forms of ladies' worktables and writing-desks; and there is one called "A Sisters' Bookcase and Writing-table," in which a small bookcase facing two ways is mounted upon a cylinder, which also opens both ways as a double writing-table; to make it more graphic, the "sisters" are thrown in,—two young ladies, with the small bunches of curls on their temples, and the high waists, of the period. Sheraton is always best in designing objects where a certain degree of weight and solidity are required; for instance, his dining-room chairs are mostly very good; but grace and elegance without pretence he had no conception of, and his "handsome" drawing-room chairs are odious in their vulgarity and ostentation. His idea of a "Gothic" candelabrum is (of course) as wonderful as Chippendale's idea of a Gothic chair; and his beds are simply masses of curtains and festoons, under which all form and construction are smothered.

If we compare the furniture designs shown in these books with what is now to be seen at the leading furniture-shops, and with books of design published more recently, we shall find that on the whole they bear comparison very fairly. There are better-designed articles, in truer taste, to be had now from good makers, than perhaps any that are to be found in these books, except a few of Heppelwhite's; but, on the other hand, there seems to have been in the practice of both Chippendale and Heppelwhite a more general unity of aim and taste than we can find anywhere at present: we have collec

tions of things in very various taste, and designed on very various principles. In regard to workmanship, it is more than probable that we can hardly get anything as good and as careful as Chippendale's work now, except by taking very special steps to secure it. As books of furniture design, it is probable that Heppelwhite, on the whole, has fewer faults and more to recommend it, than most, if not any, modern books of the kind. Certainly, some books of design of Gothic furniture which were brought out when Gothic feeling was at its height, are no more beautiful, and far more inconvenient and unsuitable, than the general run of designs in the books we have been speaking of; and in the furniture of modified Gothic feeling, which is often to be found now, there is a squareness and heaviness which is more suitable, certainly, to execution in wood, than the voluptuous curves of Chippendale's furniture, but which a future generation will probably regard as ungraceful in appearance; just as we now, having in some respects certainly a more robust and healthy taste in decorative art than prevailed in the last century, regard the furniture of that date as deficient in mass and solidity of design, notwithstanding its frequently unquestionable elegance.

THE FOURTH CENTENARY OF TITIAN'S BIRTH.

SOME weeks ago, when describing the celebration of Giorgione's fourth centenary, we had occasion to announce for the end of this year the unveiling of the statue of Titian at his native place, Pieve di Cadore. Born in the same year as Giorgione, it had been originally determined to celebrate in the same year the fourth centenary of the birth of the great master of the Venetian school. But within a short time a sad announcement of the destruction of the mould (the statue was to have been in bronze) in the course of its casting, has obliged the interesting ceremony of the unveiling to be indefinitely postponed.

Great disappointment has been, as might be imagined, expressed, but among the numerous admirers of the great painter, there have not been wanting those who have made the pleasant pilgrimage to the place of his birth, situated in the most beautiful portion of the Cadore Alps, and but a few steps, comparatively speaking, from the great high road of the gorgeous Ampezzo Pass, the rival of the Brenner in the old days, and still considered by the traditionalists as the most impressive entrance into Venetia and Northern Italy.

It is not our intention to do more than refer at present to the quiet little village of Pieve di Cadore, the birthplace of Titian, where still exists, almost untouched, the house in which he was born.

On the road to Pieve, approaching it either from Venice, or after leaving it on the road thither, one traverses the whole country in which Titian passed the happiest years of his life, and when the traveller, supposing he is visiting the Cadore hills from Venice, has left behind him the city from which we are at present writing, he soon reaches the picturesquely-situated town of Conegliano, with all its gentle memories of Giambattista Cima, called hence da Conegliano, recalled in the glowing frescoes still in excellent preservation on the exterior of the houses; while the old castle, the fortifications, and the distant ruins of the Mediæval Castello di San Salvatore, speaks of the warlike fame of the town in the days gone by,—days when the renown (still kept up) of the wine of Conegliano was universal throughout Italy, and even Germany.

But, arrived at Conegliano, the traveller to reach Titian's country must rumble in a *diligence* through the streets of the town, and pass on by the tree-bordered and well-kept high road to the antique town of Ceneda,* and now approaching the first spurs of the Alps, enter the narrow valley, between the precipice of which foams the Meschio, and passing under the gray and crumbling tower of King Madrucco,—a weird and spectral sentinel, as it were, of the Middle Ages,—enter the war-battered town of Serravalle, in whose piazza still stands the flagstaff of the Venetian Republic, and over the gateway of whose town-hall still may be discovered in a mutilated condition the winged lion of St. Mark.

And now at last we are in Titian's country; in the church of St. Maria may still be admired a famous altar-piece already more than once described, and whose authenticity is proved, not alone by the name written on it, but by the records, preserved, of an interesting dispute engaged between the painter and the governing body of the church, a dispute which lasted six years, occasioned by their desire to see substituted, and without extra charge, the St. Peter for the St. Vicenzo.

It is with no small degree of pride that the Serravallesi tell one of Titian's long sojourn in their town, and how he married his beautiful daughter Lavinia to a native of the place, Cornelio Sarcinello. From the marriage contract of March 20th, 1555, still existing, but which, alas! we have not been able to see, doubtless a superb specimen of the then still flourishing art of illumination, we learn that the dowry was 2,400 ducats,—a sum corresponding in the present day to little more than 300*l*.

Lavinia, Titian's beautiful daughter, was born, as is well known, in 1530, after her brother Pomponio and Orazio; the former's bad conduct sadly embittered the great painter's latter days, though he was through his influence placed high in the Church; the latter, Orazio, his father's pride, died in the prime of life. Titian dearly loved his daughter Lavinia, whose beauty numerous engravings by Hollar and others have made familiar to the world, from the well-known pictures at Dresden, in the Louvre, and in the Barberigo collection at Venice. To the painter's grief, his Lavinia, after having borne him six grandsons, died when only thirty years of age.

The Sarcinelli family possessed in times gone by numerous documents, portraits, and sketches by their famous relation,—treasures long since, horrible to relate, employed as fuel for the kitchen fire. The house in which Lavinia lived,—belonging at present to the Carnieletti family, we believe, who still with rare courtesy show one a Venus painted by the master, and a few documents saved from the general destruction,—is one of that characteristic type of the Lombardesque architecture which has left such a lasting impression on the towns of the Venetian *terra-firma*, showing at the same time the past prosperity of Serravalle at a time when it was the emporium of all the goods coming from or going into Germany, or, when prospered, among various other branches of industry, a renowned manufactory of arms.

Intimately connected thus, as is the town of Serravalle, with the domestic life of the greatest probably of all painters, the surrounding country is no less interesting from its being hallowed, so to speak, by the long residence of Titian.

It is not along the Strada d'Alemagna, the antique but well-kept road into Germany, through mountain gorges, down which, in this season, dash more than one foaming torrent,* or past the mist-hidden ruins of the tower of S. Floriano, standing on the banks of the dark-blue Lago Morto, and so on the direct road to Belluno and Pieve, among the Cadore hills, where Titian was born, that one must travel to reach the country-house where the great painter passed so many happy summer hours.

Turning to the right, and leaving Serravalle behind, rises before one standing alone in the midst of the fertile plain, one of the last spurs of the Alps, the Colle Umberto, recently so denominated, antique as it is, in honour of the reigning King of Italy, and on its slopes the old-world church of S. Fior, with its treasure, a picture by Cima, in excellent condition, and representing John the Baptist gaunt with famine from his fast in the desert.

At no great distance from S. Fior commences the ascent of the Colle, the slopes of which are dotted with many a pleasant patrician villa. One of these, even if not conspicious for its "model" character, is interesting as having been the residence of the well-known antiquary the Conte Domenico Morosini, the Italian Lord Braybrooke (the decipherer of Pepys's Diary) of some generations since, gifted like that nobleman with the rare power of puzzling out the most abstruse cipher. A story is extant how the Abbate Cancellieri, writing the history of the Lincei, had not been able throughout Italy to find any paleographer capable of deciphering the letters of Federico Cesi, the founder of that academy; thanks, however, to the Conte Morosini, these letters were at length brought before the public.

It would have been unjust to have passed the pleasant residence of this antiquary without a word of gratitude to his memory; and now again climbing up the hill, one reaches at length its summit. In clear weather, one is told that from this position can be seen in the far distance the line of the sea, with Venice, Treviso, Pordenone, and at one's feet the vast plain of the Camollo, where at the beginning of this century (1809) was fought between the French and Austrians the terrible battle of Sacile (in which Thiers tells us there were no less than 6,000 killed). Near us on the hill cluster the little houses of the village, where still live the descendants of the famous musical instrument-makers, the brothers Antoniazzi, — a name revered by all followers of Euterpe.

Artistic memories in this country abound; and now, descending the slopes of the Colle, we find ourselves at the doors of the church of Castel Roganzuolo, the treasure-house of three paintings by Titian. Some twenty years back, the Venetian Academy of Arts deputed several gentlemen to examine into the state of these paintings, and the decision was come to that a judicious restoration was required, but the worthy villagers, shrewdly suspecting that the pictures would be copied and their originals robbed, threatened to oppose the project of restoration, declaring that the work of Titian should never be touched. One of the Commissioners hereupon pointed to the Virgin's mantle, which was sadly chipped. "This is not Titian's work, *per Dio!*" said he; "this is canvas: nothing else than canvas." The honest authorities allowed themselves to be persuaded on condition, however, that the painter should never be left alone one instant with the pictures. All was agreed upon; but, later on, further difficulties arising, the whole work was eventually left intact. As a strange sequel to this, some five years ago the cherished Titians were found to have been stolen; not long after they reappeared, but a profound mystery will ever hang over the whole affair.

The mention of these three pictures by Titian brings us directly to speak of the country-house which the famous painter possessed here at Castel Roganzuolo. From the contract of 1549 of the Massari with Titian, it appears that for the three pictures above mentioned, 200 Venetian ducats were to be paid; it being difficult at the moment to raise this sum, it was agreed that the parishioners should lend their help to carry up to this spot the materials for a house which the painter had determined on building for his *villeggiatura* among the hills. These services were soon, however, not merely confined to the transport of materials; in the canon's house are still preserved the accounts of the period, from which we gather that firewood, grain, and wine were often carried "a Venecia a Messer Tician depentor." But the item which is the most often repeated is that of wine.

From these simple entries we learn how highly, and with what shrewdness (judging even by the wine of this year's vintage), Titian prized the product of the vineyards of these hills. It is well known that, at his house in Venice, he used to have many a joyful banquet with his brother artists and his worthy compeer, Aretino, who invited him in return in such terms as these,—"A brace of pheasants, and I know not what beside, await you at supper at Signora Angela Taffetta's; so come that, by continual merriment, old age, that spy of death's, shall never carry us off till we be old."*

So was understood the artist's life in those times, and Fra Sebastian del Piombo at Rome, remembering those festive meetings, writes to "Messer Pietro Aretino,"—"Now that I am become a monk, I do not wish you to believe that the brotherhood has spoilt me, and that I am not the same Sebastiano, painter, good companion, which, in the days gone by, I have always been," and ends by sending his greeting to Jacopo Sansovino, adding, "and to our dear compeer, Titian, I beg you to recommend me warmly and to all the friends."

* It was in this town that was born Lorenzo da Ponte, who, after having held at Treviso the chair of Belles-Lettres, succeeded in the theatre of Vienna the famous Metastasio; and, after having travelled through Europe in the vain search of fortune, married, and went to America, where he taught Italian; and, after having been a druggist and bookseller, and founded a library of some 25,000 volumes, died a Catholic, leaving his son his successor in the New York University, together with two volumes of Memoirs, written with the intention, as he says, that at least others may learn from my example what I have not had the occasion so to learn.]

* In the sixteenth century the town of Serravalle was almost entirely destroyed by a mass of rock washed down by these winter torrents, and the road this year, as we know to our cost, was completely blocked up from the same cause.

* Letters, vol. iv., p. 133.

The fatigue of his profession and his busy life at Venice rendering repose absolutely necessary from time to time, Titian determined, with this view, to reside on the enchanting spot near Castel Roganzuolo, called then as now Col de Manza.

After the death of the famous painter, the house and the fields attached (there were ten, as we learn from a note written by himself in 1566) passed to the sons of his daughter Lavinia, and from them to the noble family of Fabrio, in whose possession it remained no less than 200 years.

The site of the house having been chosen by Titian, it is easy to imagine how admirably it is situated to enjoy all the beauties of nature, and the picturesque views of the valley. Within the house all is calm, silent, and pastoral. In the distance stands out the panorama of the mountains, which recalled to him each day his native Cadore, and in the opposite direction the immense plain, through which run the silvery threads of the Sile, the Piave, and the Tagliamento, and on the extreme horizon Venice, where were centred all his art, his ambition, and his fame; almost at his feet Ceneda and Serravalle, where he looked down on the home of his daughter Lavinia, in which was centred all his domestic affection.

Here the divine painter, at the close of his glorious and still laborious life, enjoyed for many years a well-merited peace and repose, and who knows how often, under the delicious sky, and surrounded by these scenes, drinking in the inspiration of those marvellous conceptions which have rendered his name immortal, have honoured in such an extraordinary manner Italian art, and gained the admiration of the world.

Treviso.

A RUN THROUGH SPAIN.

VALLADOLID AND THE ESCORIAL.

The journey from the French frontier to Madrid, if unbroken, would be performed with reluctance. New to Spain and to Spanish towns, the traveller would naturally consider he was wasting his opportunities if he did not halt on the road, and Burgos and Valladolid naturally suggest themselves. The latter town has the advantage of being about half way, and a study of the railway time-tables prompted us to select this resting-place. We haste, however, to confess that our choice was unwise.

Burgos is by far the most attractive town. If only one out of these two towns can be visited, the preference should be given to Burgos. Yet Valladolid was the capital of Castile before Madrid acquired that honour; and even now, commercially speaking, it is one of the chief towns in Spain, especially with regard to the trade in tissues. We consequently expected to find that the hand of progress had made its mark on this old seat of learning, this antique, ecclesiastical, and political capital. It would be difficult, however to imagine a greater deception. Here, on the contrary, we met with our first melancholy experience of Spanish slovenliness, indifference, indolence, dirt, and squalor.

Our hotel, though a modest one, was, it is true, perfectly clean. Our bed-room, however, could not boast of either chimney or window. There was a little wooden trap, a foot square, which, as nimbly demonstrated by a portly chamber-maid, could be reached by standing on the dressing-table; but it was expedient not to open this, though it opened out on to a delightful terrace, for fear of admitting mosquitoes. But we ought not to complain, considering that for our room, for chocolate in the morning, a substantial lunch, and equally solid dinner, including wine, the charge was only twenty-four reals, or five shillings per day. The managers of this hotel, we might add, are so far imbued with modern ideas, that they alone in all Valladolid have ventured to advertise in the Spanish Railway Guide.

The town was one swamp of mud, with streets which we can hardly qualify as badly paved, since many of them were not paved at all. The old buildings were neglected, the churches were comparatively insignificant, and the Esgeva, an open sewer, waters the banks of the Romenada or principal promenade of the town. The unornamented cathedral Herrera built is hardly worth looking at; the sooner we pass the ugly, reddish, sun-burnt walls of St. Peter, the better, till, at last, we reach San Pablo, which alone invites a long and earnest contemplation. The side door is particularly remarkable, and here tobacco is kept under military guard. Notwithstanding this desecration, the pointed arch retains its pristine symmetry, and is not spoilt either by the fumes of tobacco, or the ruthless assaults it endured from the French during the Peninsular war. The church was, on that occasion, gutted, and thus shared the fate of other and innumerable Spanish monuments. The façade and this side porch still remain, however, to remind us of the celebrated inquisitor Cardinal Juan Torquemada, who built a great portion of this church. We should be tempted to land at the Collegiata de San Gregorio, which also possesses a splendid façade, but for the general sense of disappointment inspired by the town, viewed as a whole. How such a city can be allowed to remain in such a state of neglect when, after all, there are large fortunes made within its walls, passes our understanding. The inhabitants of Valladolid have evidently but very little public spirit. There is one detail, however, which we should in justice mention, namely, the excellence and the cheapness of one of the theatres. The Spaniards, though very fond of this form of entertainment, object to paying the indispensable charge for entrance. An ingenious compromise had consequently to be organised. Three one-act plays and three ballets are given every night; and the theatre cleared after each. Thus a complete entertainment can be enjoyed, the dilettanti can boast of having been to the theatre, and yet only disburse about a third of what they would otherwise have to pay. Profiting by this arrangement, we were able to witness a comedy and applaud a good characteristic, and in no respect immodest dance, while waiting for the evening train to Madrid, and, though we went to the stalls, the entire expenditure only amounted to 5d. We should add that this was a handsome, gay, high-class theatre, well frequented, with boxes, four tiers of velvet seats, &c. If such good performances could be witnessed in London for approximately the same price, the public houses would not, we imagine, be quite so crowded.

During the whole night the train travels onwards, through sierra after sierra, reaching sometimes an altitude of over 3,000 ft. above the level of the sea. Here the cold is intense, and as a contrast to the heat in the day, and on the plain, should be guarded against with the utmost precaution. At last the morning dawns, revealing the wildest and most disconsolate of scenes. The brown dull sierras stretch out before us, beyond a barren ugly plain fringed by the most fantastic peaks. Then suddenly these great hills seem to rush up on the train, and we cut our way through a fringe of rocks, while the monster mountains threaten us on either side. Sometimes a mountain will bear on its bald sharpened peak a huge round stone the size of a house, and yet poised so lightly, on so fine a point, that it seems as if a child's breath would suffice to send it crushing down as a mighty avalanche below. A convent has been built under one of these stones. One day it must fall and utterly annihilate the small community living under its shade. But this danger is considered as a sure corrective to temptation. One glance upwards at the quivering stone, and mundane thoughts vanish in the presence of this embodiment of death. With the best of inclinations to tolerate all that may improve our natures, and while quite appreciating the admirable moral lessons that may be derived from "a sermon in stones," we cannot but think that this crumbling rock, with its perpetual menace of thoughtless, brutal annihilation, is scarcely in keeping with the gentle, peaceful, humane teachings of pure Christianity. How much better it would be to remove these magnificent but dangerous stones, and use them for the construction of the numerous buildings Spain needs so much.

The country is now, at last, more open. To the right of the train, a flat arid plain stretches out towards Madrid. But suddenly, to the left, resting at the very foot of a huge mountain, the enormous palace of the Escorial bursts upon the view. The suddenness of the apparition, the completeness of the view obtained, the splendid site, 2,700 ft. above the level of the sea, occupied by the palace, and, above all, the enormous size of the Escorial, cannot fail to excite at least momentarily enthusiasm. For our part, we at once resolved not to proceed any further, but got out of the train directly it stopped at the Escorial station. We will not attempt to describe in detail this celebrated palace. But few buildings in the world are more open to criticism. The closer the visitor approaches the keener must be his disappointment. There is nothing ancient about the building; it has not the proportions of a Pagan temple, and it does not produce the religious effect and the awe-inspiring influence of a Gothic structure. The plain smooth granite walls, the small and scarce windows, the slate roofs, all appear more like a barrack than a palace. It is a sombre place, built by a sombre, morose monarch, whose mind was filled with sinister thoughts, whose acts were chiefly deeds of blood and persecution; a retiring, shy, perhaps remorseful, and, in any case, dull, yet, in his way, ambitious king. "From the foot of a mountain," Philip II. exclaimed, "I govern the world, both old and new, with two inches of paper." The palace was begun in 1563 by Juan Bautista de Toledo, and finished in 1584 by his great pupil Juan de Herrera. As size is its principal virtue, we should mention that it covers 500,000 ft., contains eighty-eight fountains, fifteen cloisters, eighty-six staircases, sixteen court-yards, and 3,000 ft. of painted frescos. Of these latter, those that ornament the grand staircase are particularly fine. They are also well preserved, which is not always the case, even at the Escorial. The church is, of course, the most interesting part of the palace. Its decorous black and white pavement, the superb retablo of the high altar, the screen, 93 ft. high and 43 ft. wide, which Giacomo Trezzo, of Milan, took seven years to make, the dividing columns in jasper, the beautiful alabaster pulpit, the paintings, and the gilt statues, all contribute to enhance the beauty of the church, and to detain the gaze of the visitor. Perhaps, however, the majority of tourists will be more interested in the contemplation of the bronze gilt effigies of Charles V., the greatest of all Spanish monarchs, and his wife and his daughters kneeling in a low oratory of black marble on one side of the altar; while, on the other side, Philip II. and three of his four wives, and his son Charles, form a similar group of statuary. These statues are excellent portraits, and are most richly inlaid with marble and precious stones. Immediately below the effigy of Philip II. is a dark, dismal, ill-ventilated, cold room, whence a view may be had of Charles V. opposite, and of the high altar. It was here that Philip II. spent in agony the last days of his life; dying, at last, in this miserable room, which by its general disposition would in itself suffice to kill an invalid, notwithstanding the 515 relics, each in separate shrines, which this miserable monarch kept close at hand.

From here we descend into the Royal tomb, which is under the high altar. It is a gorgeous chamber where, even in death, the kings of Spain are able to surround themselves with a certain splendour. It is an octagon 36 ft. in diameter and 38 ft. high, made principally of dark polished marble and gilt bronze. There is a tawdry chandelier, some angels that are well sculptured, and a fine crucifix. Twenty-six niches have been built in the wall to receive the kings and queens of Spain, for none must rest here but those who have actually reigned on the throne. The queens are placed to the left and the kings to the right of the altar, in somewhat gracefully-shaped marble coffins. But for the length we should be inclined to consider these coffins rather in the light of urns. The bodies go through a process of mummification, and are not admitted into this Pantheon for some years. Thus the body of the late Queen Christina is confined in a little chamber half-way down the staircase, and will not be admitted to her final resting-place in company with the other monarchs till a certain process of decomposition, or rather of mummification, has been accomplished. In the same manner the body of the unfortunate young Queen Mercedes is kept apart in a little chamber near the altar.

The library is well worth visiting because of its ancient manuscripts, its beautifully illuminated works, and its magnificent Arabic Koran. There are innumerable paintings, frescoes, specimens of tapestry work, &c., which we cannot stop to describe. The apartments that are inhabited when the royal family come to the Escorial seemed to us cheerless in the extreme. The furniture was poor, gaudy, and uncomfortable. There were straw chairs in the dining-room! Two or three rooms, furnished with rich marquetry, were certainly handsome; the doors, the furniture, the wainscoting, all were most

richly inlaid. But the whole was spoiled by the presence of a most inartistic and vulgar clock on the mantelpiece.

In spite of all these criticisms, it must be admitted that the Escorial is a wonderful place, and thoroughly repays the trouble of a visit. Indeed, no Spaniard would forgive the stranger who passed near Madrid and failed to visit the Escorial. The Spaniards are immensely proud of this gloomy building, which certainly contains many curious objects, and affords ample food for thoughts on history, theology, painting, and architecture.

ONLY A BREWER.

A LITTLE more than a mile from the Northern capital, Copenhagen, on a moderate eminence, which permits of an extensive view over the green Sund as far as the blue coast-line of Sweden on the other side of the broad channel dividing the latter from Denmark, rises a large block of buildings which might be taken for a castle, but which its tall chimneys betray as an industrial establishment. It is the Karlsberg Brewery, one of the largest of Scandinavia. This extensive establishment was founded in 1845 by Hr. J. C. Jacobsen, for the express purpose of introducing in Denmark the brewing of "young" Lager-beer, *i.e.*, beer to be consumed before it is one year old, such as is drunk in immense quantities in Germany, whence its manufacture and consumption have spread not only over almost the whole Continent of Europe, but also to the United States, &c. The owner of the Karlsberg Brewery himself has told us how, at the beginning of his career as a brewer, he travelled to Munich, that happy home of brewers and Elysium of beer-drinkers, in order to bring to Copenhagen a small quantity of yeast *in his hat*. This insignificant treasure, however, he knew how to employ correctly and how to increase. During the first few years he produced only about 70,000 gallons of beer per annum, but by degrees the Northmen began to like the taste of the precious Germanic beverage, and thus the annual production of Lager-beer in his brewery has risen to over 3,000,000 gallons! Everybody knows that such success must be based on solid foundations. They were supplied in the case of the Karlsberg establishment by the energy and the scientific capacity of its founder and conductor. Jacobsen is the first brewer in Denmark who has had the good fortune and the opportunity of being able to acquire a thorough training in natural sciences. The discoverer of electro-magnetism, H. C. Oersted, was the director of the Polytechnic School of Copenhagen, where young Jacobsen studied, and the latter is greatly indebted to that naturalist, who was his favourite teacher, and who seems to have transmitted to his disciple a share of his spirit of inquiry, for awakening that love of natural sciences which later on in life incited him to future exertions. The amiable disposition of character of the author of "The Soul in Nature," which attracted permanently all who once came in contact with him, gained him a school of enthusiastic followers, who emulated each other in the endeavour to be worthy of such a master. The wonderful influence exerted by Oersted on many of the most eminent of his contemporaries—we need only mention Oehlenschläger, Thorwaldsen, Andersen, amongst others,—acted also powerfully on his disciples, among whom he himself accorded to young Jacobsen a high position. The latter, under such guidance, devoted himself heart and soul to Science, and has continued faithful to her, by introducing her intelligently and perseveringly into practical life, and by constantly calling upon her in his own particular sphere. In this he succeeded to his great satisfaction, but only in this sense, that he was able to prove the close connexion between theory and practice, and thus showing that there is nothing nobler than a blending of the beautiful and the idealistic with the useful and reality of life. There are not many such high-minded men, and of these, the Dane Jacobsen is one of the foremost. It is well that his example should be held up to the gaze and emulation of a larger public.

As soon as Jacobsen was independent, he threw himself with fervour into public life, developing an unwearied activity in many directions, without, however, in the least neglecting or impairing his own industrial activity. For many years he was a busy member of the Municipal Council of Copenhagen. The Danish Government commissioned him, the brewer, to superintend the erection of the buildings in the new botanical gardens, which contain a collection not often met with, and on that account to be seen. He showed his knowledge and talent as architect by designing the plans for the palm-houses and conservatories with novel heating and ventilating apparatus, no less than by conducting all those works to their completion, all the time giving his services gratuitously. When, in 1859, the celebrated chapel of the castle of Frederiksborg was burnt down, Jacobsen undertook its re-erection and the restoration of its numerous treasures of art, at his sole expense, and at the present day the church stands there more beautiful than before, an object of veneration, the goal of every pilgrim who visits Denmark, and a monument to the munificence of one of her children. Being an eminent connoisseur, the brewer has a picture-gallery and a collection of works of the plastic arts which seek their equal; he gives employment, moreover, throughout the year to national painters and sculptors in large numbers, mostly for public purposes. It may also be mentioned that Jacobsen, after being member for several years of the second chamber of the Danish Rigsdag, was made a life peer of the house of lords. Truly, an ornament to any house of lords, and yet only a brewer!

After thus describing the man, we may speak of his latest foundation. In the autumn of 1876, Jacobsen announced to the Copenhagen Academy of Sciences that he had put aside a capital of one million crowns (65,000*l.*) for a "Karlsberg Institution," the more immediate object of which was to promote the industry of beer-brewing by scientific investigation, and to perfect it to its greatest possible extent. In the next place, it was to render support to all branches of natural science, as well as to mathematics, philosophy, and history, as far as the means would permit of it. The administration of the Institution and the execution of its regulations are to be handed over to the Danish Academy, which selects from its midst a direction of five members. Three of the latter, which must be naturalists, form, with two non-academical professors, the executive committee, or the supervising body of the laboratories. All those persons receive for their labour stipends, ranging from 26*l.* to 65*l.* per annum. The conductors of the laboratories receive a salary of 208*l.*, with a quinquennial rise of 39*l.*, until it reaches the maximum salary of 390*l.* They receive besides free residences, firing, and light at the Karlsberg Institution. The chemical, physiological, physical, and other laboratories are in connexion with the extensive buildings of the brewery; at present only the first is completed, and fitted up completely, at an additional expense to Jacobsen, with apparatus, collections, library, &c. The administrative body of the Karlsberg Institution consists at present of the following members of the Academy and professors:—Madvig, Steenstrup, Panum, Barfoed, and Holm, all names well known beyond the borders of their country, some of them enjoying a high reputation. The conductors of the chemical and physiological sections of the laboratory are Hr. M. Kjeldahl and Hr. M. R. Pedersen, both tried men of science. The work was begun in 1877, and a series of happily chosen and interesting experiments were begun. They include at present only such problems as touch upon zymology, especially the chemistry and mycology of beer.

Should the principal aim of this magnificent institution be directed towards supplying a scientific foundation, already possessed by the two important branches of sugar-refining and distilling, to an industry hitherto carried on in a commonplace sort of way, this special object can only be commended. Jacobsen feels that he is indebted to the trade which had made him a millionaire, and that he cannot pay more efficiently than by ensuring the perfection which it otherwise could not attain to. The laboratory established by the Association of German Brewers pursues the same object, but its labours are more one-sided and its investigations more restricted. Other trades in Germany, where chemistry plays an important part, have also notably distinguished themselves in this direction. We may only mention, among others, the laboratory of the German Tanners' Association at Berlin, where knotty questions affecting that important trade are solved.

The Karlsberg Institution will soon develop into a great scientific central institute in which zymological investigation will only occupy a section. The founder is proceeding in this direction unfalteringly. Already in the spring of 1878 he increased the capital of the institution by 12,000*l.*, the interest of which sum will be devoted to the establishment and extension of a natural history museum, to serve as a complement to the institution. The museum is to be located in the rooms of the castle of Frederiksborg, to the re-erection of which after the fire Jacobsen contributed 17,000*l.* All those magnificent gifts of a warm patriotism, combined with an appreciation of the wants of our time, and an ardent zeal for propagating information, engender a feeling of reverence for the man who so unselfishly brings such vast gifts.

But the country and the people from which spring such men must not be forgotten. And Scandinavia, and again little Denmark, are full of them. There is not another country, speaking proportionately, which is able to pass in muster such a large number of institutions for public purposes. Besides numerous smaller ones, there have been added during the last few decades several important institutes, which represent a capital of 520,000*l.*, of which 130,000*l.* have been exclusively devoted to the arts and sciences. In Sweden the recently deceased J. Letterstedt has left for the advancement of science in the three Scandinavian kingdoms a sum of 39,000*l.* The name of Oskar Dickson, of Gothenburg, has been made known all over the globe by the equipment of three expeditions for the exploration of the Arctic regions. The latter has also given thousands towards the foundation of important schools and collections in his country. In the city of Copenhagen alone, deceased citizens have, within the last five years, left to its charitable and public institutions, whose possessions already amount in value to millions, a sum of nearly 100,000*l.* Since her liberation from the incumbrances of the German duchies, which were a clog to her national development, Denmark has progressed in every respect, but especially materially,—silently, it is true, but all the more rapidly, so that she, in this respect, may serve as a pattern to many other countries, much larger and placed more fortunately.

But to return to the subject with which we started,—to our brewer and brewing. The often-repeated objection, that good beer may be brewed, and has been brewed, without going for advice to the chemical laboratory, may be decisively met by the fact that wherever brewing is carried on on a large scale, producing always a well-known article of consumption, it is carried on on scientific principles. The results of the award of prizes at this year's Paris Exhibiton are proof of this assertion. The greatest distinction,—the Grand Prix,—in the branch of brewing, has been carried off by Dreher in Schechat, Bergner & Engel in Philadelphia, and — J. C. Jacobsen in Karlsberg, near Copenhagen. The honest Danish patriot (to borrow from a contemporary) who thus nobly causes the riches acquired by a scientific pursuit of his trade to flow back to the people which contributed to their accumulation, and whose name will surely shine amongst those of the greatest benefactors of mankind, will pardon us if, by the publication of the preceding data, we should hurt his well-known, almost excessively modest simplicity. But, once more, it is useful, it is advisable, in our time of egotistic materialism, to hold up to the public a picture whence are yet reflected unselfish humanity, unpretending patriotism, and a just appreciation of the means to the end: the welfare of the people, even at the risk of some nabob or mental Lazarus shrugging his shoulders, and turning away from it with the contemptuous "Only a brewer!"

New Vestry-hall for Kensington.—The foundation-stone of a new vestry-hall for the parish of St. Mary Abbotts, Kensington, was laid on the 12th inst., upon a piece of ground immediately adjoining the old vestry in High-street, by Lord Kensington, M.P. General Boileau, the chairman of the building committee, read a statement, from which it appeared that whereas in 1851 the houses and premises in the parish numbered 6,131, with an annual rateable value of 228,864*l.*, they had now increased to 21,908, with a rateable value of 1,396,956*l.*, only 350 of the 2,245 acres comprising the area of the parish not being covered. The cost of the hall and offices would amount to 30,549*l.*, and the gross expenditure, including purchase of freehold, &c., would be 41,671*l.*

THE HIGH SANCTUARY AT JERUSALEM.

The discussion on Lieut. Conder's paper* on this subject was resumed, as elsewhere stated, on Monday evening last, at the meeting of the Royal Institute of British Architects. In our report of the proceedings at the Institute, a fortnight ago (p. 1281, *ante*), we mentioned that Mr. Fergusson replied to some of the points raised in the paper, and said that he would put his remarks on paper, for submittal to the meeting on Monday evening last. The following is Mr. Fergusson's paper, amplifying the remarks made by him at the previous meeting.

Mr. Fergusson said,—I rise with considerable reluctance to attempt to reply to the paper by Lieut. Conder, not that I feel the least difficulty in answering all the objections he raises to my views, but that they are brought forward in such a form as to render it extremely difficult to follow the reasoning on which they are based. I have myself frequently intended to bring the subject before the Institute, but have always been deterred by its extreme complexity. There are so many authorities to be sifted, so many plans and diagrams to be drawn, in order to make it intelligible, and so many collateral illustrations to be adduced, that I have always felt that to attempt this before an audience not specially interested in or familiar with the subject would be labour in vain. I have, consequently, thought it better to write a book, in which all these things could be brought forward, with all the necessary references to authorities, in such a manner that any student might at leisure, with books and drawing-board by his side, master the whole much more satisfactorily than in listening to a single lecture on so complicated a subject. All this has been done in my "Temples of the Jews and other Buildings in the Haram Area at Jerusalem," a volume of 300 quarto pages of text, with nine plates and fifty-two woodcuts. To answer the paper I would like to read you my book from the beginning to the end; but this you would hardly stand, and I must content myself with such explanations of it as the time remaining of this meeting will admit. If I felt that I could not, with all the illustrations and appliances at my command, make my views intelligible in a single night, even if I confined myself to the Temple only, it is hardly to be expected that Lieut. Conder could make, not only his, but mine also, intelligible in a paper, with very scant diagrams and without a single reference to authorities, while ranging over, not only the Jewish, but the Christian and Saracenic, buildings in the Haram area.

Although it is not expressly so stated in so many words, it is quite evident from the context that this paper is, from the first line to the last, intended as a refutation of certain heresies of which I am accused regarding the topography of Jerusalem. His theory of the site of the Temple and its area is not, as I understand it, put forward as a serious scheme, and certainly is not worked out either with the detail, or the references to authorities, that could command acceptance from others. As he himself states, it is put forward as a "theory or hypothesis indicating the direction in which we should work"; the advantage of introducing such things here being that if anything can be said in their favour, it is so much argued against my views—as it is impossible both can be right—and *pro tanto* it aids the whole argument of the paper. The objections to my views, however, are in this paper stated in so indistinct a manner that it would even now be quite open to its author to say he had never seen or heard of my work above referred to, and his strictures referred to some previous publication of mine. Certain it is that the work is not once named in the paper. My words are nowhere quoted, and no reference is made to the page or place where any statement is to be found, so that, though I may guess what is intended, no one else can be sure. More than this, I have no hesitation in asserting that a full and detailed answer, with all the requisite illustrations and references, will be found in my work to every one of the objections raised to my views in this paper. Whether these are logical and satisfactory others must determine. To me they appear completely so; but however this may be, it is not a sufficient reply simply to ignore them, as is done in this paper throughout. So completely is this the case that, had this paper appeared anywhere else, I probably would not have thought it necessary to reply to it, but coming in so formal a manner before the Institute, I feel it incumbent on me to offer such remarks as the limited time at my disposal will admit of, though this will be hardly more than sufficient to enter a protest against its assertions.

In the first place, I must be allowed to object *in limine* to any one being allowed to put forward any scheme for restoring the Holy House without first having worked through all the indications regarding the temples of the Jews to be found in the Bible. It has been too much the fashion to neglect these as indistinct and unintelligible, and to trust more to the assertions of the Talmud, which certainly are distinct enough, but in almost all cases can be proved to be erroneous, or erroneously applied, from the ignorance of the Rabbis of the real form of the building they were talking about. I have gone over the passages in the Bible referring to the Temple, not only once, but several times, and always with an increasing conviction that, with the knowledge we derive from other sources, they are sufficient to fix the position and dimensions of the temples of the Jews within the narrowest possible limits. I may say, we now know that the dimensions of the courts of Solomon's Temple were 300 cubits east and west, by 100 cubits north and south. The temple Ezekiel describes in his vision was of the same dimensions, though he complicates the matter by adding a north and south court, making it 300 cubits in that direction also. We know from the description of Hecateus of Abdera, who saw it in the time of Alexander the Great, that the Temple, as rebuilt after the return from the Captivity, was of these dimensions, five plethra (500 ft.) east and west, by 100 cubits in the other direction, and when we come to protract the Biblical measurements on the Ordnance Survey, combined with what we learn from Josephus and the Talmud, we find that, from the inner side of the wall of Solomon's porch,—the site of which is perfectly well known,—to the inner side of the wall at the back of the court of the Holy House, it measures 300 cubits,—450 ft.,—neither more nor less.

It is of course impossible for me to enter at present into the details, though they will all be found in my work above referred to, and I must consequently content myself by stating broadly that I have embodied all the indications found in the Bible, combined with all the measurements furnished by Josephus and the Talmud, in a plan of the Temple which forms plate No. 2 of my work, which was drawn on a large plan of the Ordnance Survey. Having done this I find the whole so consentaneous, and to fit so well together, that I would now undertake to draw a circle with a foot radius, on the pavement of the Haram area, which should mark the centre of the Jewish altar, within its limits, and another further west, which should mark the centre of the Holy of Holies within the same limits of deviation. Having fixed these two points, and the external dimension being fixed by the Ordnance Survey (as will presently be shown), I assert that there is not one dimension or one feature in the plan of the Temple which may not be fixed within the limits of a cubit or two at the utmost. There may be some details of the chambers and minor features which require further consideration, and the elevation may be open to criticism, owing to the scant materials for reconstructing it; but in so far as the plan and general outside dimensions are concerned, I have no hesitation in saying that there is no building in antiquity of the same extent and complication whose plan and arrangements can be made with the same certainty. There may be errors of arithmetic or of typography in my work, but, barring such, I challenge the exposure of any error beyond the limits, above indicated, in my plan of the Temple of Jerusalem as rebuilt by Herod. I need hardly add that no such criticism has yet been attempted, nor probably will be soon, as requiring more care and attention than it is usual to bestow on such subjects.

Without attempting this, and indeed without referring to any of my plans, Lieut. Conder resumes the argument by enumerating six objections which he considers quite fatal to my theory of the Temple of the Jews. As these are really the most important points in his paper perhaps you will allow me to state as briefly as I can why I think them irrelevant.

No. 1.—"The south wall of the Haram, as above shown, is 922 ft. in length, and the master course runs unbroken beyond the limit proposed by Mr. Fergusson."

When I first wrote on the subject ("Topography of Jerusalem, 1847," p. 8), I was content to state that the Stoa Basilica could not extend beyond 600 ft. from the south-west angle of the Haram, from which point Lieut. Conder and every one else admits that it began, because there was nothing beyond for it to stand upon. Finding that this was overlooked, in 1860 I published a diagram in Smith's "Dictionary of the Bible" to show how impossible it was. This answered its purpose for a certain time, but in 1875, in the *Athenæum* journal (June and July), Captain Warren challenged me to show why it should not extend to the south-east angle. I answered, firstly, that forty columns extended over 922 ft. would require epistylia 24 ft. in length, and none such existed in the ancient world; and, secondly, that beyond those 600 ft. there was nothing but what he afterwards called "weak arches of the Byzantine period" ("Underground Jerusalem," pp. 347, 325). After shifting his ground once or twice, he turned to personal abuse, and so closed the correspondence, and I thought I had done with him, and am surprised that the question should again be brought forward. If Lieut. Conder will only draw a plan and section of these vaults with the Stoa over them, he will, I feel, be convinced that it is impossible it did extend over them. Besides, this extending the Temple to the south-east angle leaves no room for Solomon's palace, which, I believe, undoubtedly existed in that corner. Plan No. 1 of my work, with the accompanying text, proves this, to my mind, beyond all dispute; but if I am wrong, say so; and say where the error lies. Simply ignoring my statements and plans is no answer. Till it is shown to be otherwise, I assert that the triple gateway stands on the site of the Horse Gate of Solomon's palace where Athaliah was slain (2 Kings xi. 19), and the corner tower was "the Great Tower by the wall of Ophel, which the Tekoites repaired." The corresponding "tower by the Court of the Prison" was 600 ft. further north, and marked the north-east angle of the king's high house (Nehemiah iii. 25 to 27). All this seems so clear and certain, that till the error is pointed out, I must be allowed to assume it as a fact. When some one will explain what the "master course" means, and whether it was put there by Solomon, or Herod, or Justinian, I will state whether I agree with him or not. It does not at present appear to me to have any bearing on the question; but if I were asked to guess, I should say it was part of Justinian's repairs, as all the work above it certainly is.

No. 2.—"The junction of the Ophel wall with the south-east angle also points to the east wall of the Haram as being the old east wall of the Temple, and the Double and Triple Gates correspond to the two Huldah, or 'mole-gates' of the Temple, according to the Talmud."

This objection is fully answered in the preceding paragraphs, and I could therefore only remark that the Huldah Gateway under the Mosque El-Aksah is double, and as such fully answers to the description given of it by Josephus (Ant. xi., 5) and the Talmud, so far as I know it; though, as Lieut. Conder gives no reference, I do not feel sure. But, from all I know, I feel certain that the assumption that there were two separate entrances, at some distance from one another, is wholly gratuitous, and unsupported by any fact within my knowledge.

Nos. 3 and 4.—"The north-west corner of Mr. Fergusson's enclosure is placed where the rock is 100 ft. lower than the Sakhrah; thus, there is no possibility of the existence of a rock-scarp at this point, such as is required for the site of Antonia. Foundations would, on Mr. Fergusson's hypothesis, be required for the Holy of Holies, which would be from 60 ft. to 90 ft. deep, in order to give to the floor of the Temple the requisite elevation (as given in the Talmud) above the outer court."

Objections 3 and 4 may as well be taken together, as they refer to matters of which neither Lieut. Conder nor I have any real knowledge. On this subject, however, I may be allowed to remark that both Capt. Warren and Lieut. Conder have done immense injury to the correct topography of Jerusalem, by publishing imaginary contours of the rock surfaces at Jerusalem, at depths which neither they nor any one else saw, or ever could have seen them. Capt. Warren's contoured plan of the Haram area ("Recovery of Jerusalem," p. 298) is one of the most misleading documents ever published, being based wholly on imaginary surfaces he never saw; and Lieut. Conder's state-

* See pp. 1269, 1307, *ante*.

ment that the rock was from 60 ft. to 90 ft. below the Holy of Holies is in itself sufficient to show how little is really known. So far as I can make out,—and I believe I may state that Major Wilson entirely agrees with me,—the rock rises gradually though irregularly from the valley of Jehoshophat to a ridge terminating westward in something very like a cliff, where I believe the tower of Antonia to have been, and just behind the Holy of Holies of the Temple, where I place it. Where the altar stood, the rock rises almost to the surface; and I see no reason for supposing that it is many feet below where the Holy of Holies stood,—6 ft. or 9 ft., I believe, would be nearer the mark than 60 ft. to 90 ft.; but even if it did, all that can be said is, that Solomon raised the foundations of his Temple in the same manner and from the same depth that Herod afterwards accomplished. No further argument can be based upon it; and that may safely be disregarded, in comparison with the mass of evidence for fixing it where I have done. In like manner, if there was a drop of 100 ft. in the 400 ft. which extend from the Dome of the Rock to where it was next seen under Wilson's arch, the probability is that there would be a cliff of 50 ft. in height somewhere on which the "Turris Antonia" might be placed. But till we really know where the rock is, these are idle speculations; and I do not profess to be able to see further through the solid earth than my neighbours.

Fifth objection. "There are no remains of ancient rampart walls on the lines where Mr. Fergusson draws the north and east boundaries of the Temple."

If my views are correct, the facts are the exact reverse of this. At a distance of exactly 600 ft. from the south wall, and perfectly parallel to it, is a wall 10 ft. to 15 ft. in height, supporting the terrace of the upper platform. I believe that what we now see is the inner face of the north wall of Herod's Temple; it extends 600 ft.,—or, more exactly, 585 ft.,—from the west wall. In like manner, if we measure 585 ft. from the south-west angle, we come to the treble gateway, where the wall, here 40 ft. in height, turns up at a right angle, still visible for some 200 ft. in length, partly cut in the rock, partly in old masonry, though a good deal knocked about, till it loses itself in the mass apparently of Justinian substructures; but, if continued to a length of 600 ft., it would meet the north wall of the Temple at 585 ft. from the western wall. We have, therefore, on the Ordnance Survey, a perfectly regular rectangle 600 ft. by 585 ft., perfectly level throughout, and in every way suited to receive and accommodate such a temple as that Herod built at Jerusalem. I need hardly add, there is no other spot in the Haram area, or anywhere else, where the Temple could be placed, with boundaries so well defined, and which, so far as I know, cannot be increased or diminished by a single foot without getting into difficulties which, so far as I am capable of forming an opinion, are absolutely insurmountable.

Sixth difficulty. "The dimensions in the Talmud give an area considerably greater than the 600 ft. square proposed by Mr. Fergusson."

The first answer to this is, that it is of the least possible consequence what the Rabbis said, when contradicted by the evidence of the Bible, of Josephus,—who is never wrong in plan, though frequently he exaggerates heights,—and the Ordnance Survey, whose correctness no one disputes.

The second answer is, that the Talmudic dimensions are a mistaken quotation from Ezekiel. What that prophet said was (chap. xlii., 16 to 20) that the boundary-wall of the Sanctuary,—the Temple itself, as before stated, he makes only 300 cubits square,—measures 500 reeds, or 3,000 cubits each way. The Septuagint rightly considering this an improbable dimension for a temple, translated it cubits; and the Rabbis, adopting this as a sacred measure, gave it as the dimensions of the "Mountain of the House," but being unable to reconcile it with their other measurements for the holy places, put the 100 cubits so gained beyond the true 400 of Josephus, into the semi-sacred Court of the Women, where it is easily shown it was impossible. Generally the Rabbis are aware of the difficulty: some try to explain it, by saying that it means the smaller cubit of 15 in., while they know and admit that Josephus used the Greek cubit of 18 Greek inches. The one, they say, means 600 ft., or one stadium, the other 625, which they consider as no material difference. Lieut. Conder's cubit of 16 in.,—which I never heard of before,—would make 666 ft.; but even 18 in. would only make 750 ft., which is still far from 922 ft. But none of these hypotheses will bear a moment's examination, for reasons I have stated elsewhere, but which are too long to go into here. The truth of the matter is, the Talmud is a perfectly worthless authority when its statements cannot be checked and authenticated from other sources, and in this instance is demonstrably wrong.

In concluding this part of the subject, allow me to state, as distinctly as I can, the Temple of the Jews, as rebuilt by Herod, was a rectangle 600 ft. by 585 ft., situated in the south-west angle of the Haram area; and within that space it is easy to arrange all the buildings described by all the known authorities with exactness and consistency, were it either larger or smaller, or were these two dimensions in the opposite direction, I believe it would be impossible to do so. The result is shown in plan No. II. of my "Temples of the Jews"; and I wait now for some one to point out any important or even appreciable error in the plan so drawn. I believe it will stand the most searching scrutiny; and certainly nothing in it is invalidated in the slightest degree by any of the six objections brought forward by Lieut. Conder, to which I have just been replying. So long as the correctness of this plan remains unshaken, I must be allowed to consider the position and plan of the Temple as settled beyond dispute; and all reasoning with regard to it, or to the other buildings in the Haram area, must consequently be based on this plan as an established fact.

The second part of Lieut. Conder's paper is a more direct attack on my theories than even the first, though he still leaves it doubtful which of my works on the subject he refers to, or whether he has ever seen the last. It is, however, a part of the subject which it is much more difficult to reply to, not only from its greater complexity, but also because the authorities on which any reasoning can be based are generally unknown to any ordinary English audience. Every one possesses a Bible, most possess a copy of Josephus, and many have access to the Middoth of the Talmud, and these nearly suffice to enable any one to form an opinion as to the correctness of any theory of the Temple. On the other hand, very few are familiar with the Byzantine historians, between Constantine and Justinian; fewer still are acquainted with the Arab writers on whom we must depend for our knowledge of the history of their buildings in the Haram; and it is even rarer to find any one well read in the Mediæval narratives collected and edited with such care by the late Titus Tobler. Under these circumstances, without the least desire or intention to mislead, it is manifestly impossible within the limits of a lecture to produce all the quotations and references necessary for forming a judgment on such a subject, and without them what is said can only be a mere string of assertions which must be taken on trust, as no means are afforded of verifying them. In my various works on this subject, I have given the extracts and references and other data required for the elucidation of the argument, but so far as I know no one has ever read them. No one certainly has ever noticed them in print, though had any one done so, this controversy would long ago have been settled one way or another. As it is, it remains pretty much where it was when I took it up thirty years ago. Such being the case, I shall not now attempt to follow Lieut. Conder through all the various statements he makes in his paper, but shall confine my remarks to such as present some novelty either as being the result of his own researches, or a new reading of passages already known.

Among the first, Lieut. Conder considers the Dome of the Rock could not have been built by Constantine, because the capitals and bases of the twelve columns supporting the inner drum of the Dome, which he was the first to draw with sufficient care to make the fact obvious, are nearly all different. If I or any one else had ever asserted that the building was erected entirely of new materials, this would be an argument, no doubt, but it would have been quite contrary to the spirit and practice of the age that it should be so. Any one who knows anything of the buildings of Rome at that time knows that, almost without exception, they are made up of materials torn from older buildings, and used in the most incongruous manner. Not to travel beyond our record. In the Lateran Baptistery, which Constantine erected as his own tomb-house ("Temples of the Jews," W.C. 66), half the capitals are Corinthian, half are Ionic, and so in almost every basilica or building of that age in Rome. At Bethlehem, where there were no remains, the capitals seem all original, but at Jerusalem we know that Hadrian built at least one temple to Jupiter. We know that a temple to Venus stood over the Sakhra, which had to be cleared away before the sacred Cave was disclosed (Eusebius, "Vita Constantini," iii., 26 and 27), and no doubt there were many other temples and porticos erected during the two centuries and a half that Jerusalem was a flourishing Roman colony, and from some of them these columns may have been taken. Had any of the capitals been later than the time of Constantine, it would have been an argument. Very many of those in the Aksah are of the time of Justinian or later, and prove that this building is after his time, and of a different age from the Dome of the Rock, where all the capitals are either of the time of Constantine or anterior to his age. This, as far as it goes, is a proof that though the Aksah is known to have been erected after Justinian's time, the Dome of the Rock certainly belongs to a different and earlier age. I do not in fact believe that any architect can examine the drawings and photographs of these two buildings without perceiving and acknowledging this as a fact. If the Aksah was erected in the seventh century, the Dome of the Rock is certainly some centuries earlier.

Of the second class, one of the most startling novelties of Lieutenant Conder's paper is his adoption of what always appeared to me a very silly conceit of Mejr-ed-din, an Arabic writer of the sixteenth century, that the Dome of the Chain had been erected by Abd-el-Malik as a model of the Dome of the Rock in order to judge of the effect before commencing the larger building. Any one, I fancy, familiar with Oriental literature, would see that this is just such a fable as an Oriental writer living eight centuries after the events would be sure to invent, to account for a certain similarity that existed between two buildings so near to one another, but of whose real history he knew absolutely nothing.

The adoption of this story, if it rested there, would be of the least possible consequence, but to found on it the theory that the Dome of the Rock was originally erected without external walls, in spite of the recent discovery of the upper arcades, with their mosaics and all the features of Byzantine architecture recently disclosed, is one of the boldest flights of imagination of this class I am acquainted with. What we really do know of the Dome of the Chain is that during the Crusades, at all events, it was considered the tomb of James the Just, the brother of Jesus, and if my view of matters is correct, nothing could appear more natural than that his tomb should be found in immediate proximity to that of his brother. But be this as it may, Theodoricus copied the following inscription from its walls (see Tobler's edition, p. 42):—

> "Dic, lapis et fossa cujus sunt, quæ regis ossa,
> Sunt Jacobi Justi. Jacet hic sub tegmine busti."

As is perfectly well known, the moment the Crusaders entered Jerusalem, in the year 1099, they seized on the Dome of the Rock, which they called Templum Domini, in contradistinction to the Templum Salomonis, which they knew was represented by the Aksah. That they desecrated and turned into a barrack for the Knights Templars, whence their name; on the rock, however, in the "Temple of our Lord" they erected a golden cross, and adorned it with precious marbles. A golden lamp hung over it and burned day and night during the eighty-eight years they possessed it; "Canons regular" were appointed to superintend constant services, and in every respect the Dome of the Rock was considered as sacred and as important a Christian edifice,—whoever built it,—as the Sepulchrum Domini, which then stood in the middle of the Christians' quarter of the town. There seem no means now of knowing exactly what they thought the rock and its appurtenances really were, nor do any of the Latin inscriptions in mosaic, with which they adorned its walls both internally and externally, clearly express this. Yet these inscriptions are important for our present purposes, as they prove incontestably that the Cufic inscriptions which now take their place, though so confidently relied upon by Lieut. Conder, are forgeries of the thirteenth century, after the building was recovered by the Moslems under Saladin.

In the first place, it is most improbable that the Crusaders should have allowed inscriptions in the writing of the infidels and in praise of their false prophet, as they called him, to remain on the walls of their most sacred church. It will not do to say the people could not read them. Their doctors and learned men could; and even the character of the writing was an insult that all could appreciate. Besides this, however, we know that the building was covered inside and out with Latin inscriptions in the place where these Cufic inscriptions now are. These were copied by two independent witnesses, Theodoricus and John of Wurtzburg, and are quoted at sufficient length in my "Temples of the Jews" (p. 220 *et seq.*).

I cannot, of course, attempt at this moment to go into the history of these mosaics; my reasons for believing them forgeries are given at length in my work just referred to (pp. 218 to 224), to which those wanting further information on the subject are referred. The Latin and Cufic inscriptions are, however, of very great importance to the history of the building, and whether I am right or wrong regarding the latter being forgeries, it is not a fair mode of representing my case to ignore them altogether, and pass over in silence all I have said regarding them, as Lieut. Conder has done.

The subsequent history of the Dome of the Chain, in so far as I can make it out, is simply this. When the Mohamedans under Saladin resumed possession of the Dome of the Rock, they found themselves in possession of a building in which prayer was impossible according to the Moslem ritual, because the principal entrance was on the south, in the direction of Mecca, and though it was not absolutely indispensable, it was convenient to have a place of prayer close at hand. So, at least, it has been found in all the great Indian tombs which are similarly situated. They consequently converted the Tomb of St. James for this purpose, by providing a prayer niche on the south, which was all that was required to adapt it for a mosque, and it has been so used ever since. Who the original builder of the Dome of the Chain may have been I do not pretend to know, but that it was originally erected as the Tomb of St. James seems nearly certain; and if his was so, it certainly was not erected by Abd-el-Malek as a model, or for any other purpose.

There is, therefore, nothing in all this, or in anything said in the second part of Lieut. Conder's paper, that at all shakes my faith in my statement, that the Dome of the Rock is the identical building which Constantine erected, over *what he believed to be the Sepulchre of Christ*. I may be right or I may be wrong in this, but certain it is, at all events, that nothing that has yet appeared in print can be considered for one moment in favour of this view as an equivalent to the arguments adduced. As I said before in the preface to my last work on this subject, some one or some new discovery may at some future time alter the aspect of the case; but as it at present stands, the evidence in favour of this theory is absolutely unrefuted.

A very few words will suffice to show that Lieut. Conder is entirely mistaken in stating that the Mosque el Aksah was originally the Mary Church of Justinian. It is one of those assertions which every one repeats without thinking, and many will probably go on repeating in spite of any amount of refutation. Broadly, the fact is this. The Aksah stands, even on Lieut. Conder's own showing, within the precincts of the accursed Temple of the Jews, and Justinian did not and could not build his church on a spot so utterly abhorred by the Christians. Without going into details, every one knows the history of Julian's abortive attempt to rebuild the Temple. So impious was this considered, that all Christians of that day believed that it was stopped by miraculous interference from heaven; and any one who will read the account given by Eutychius (A.D. 870) of the grant of this site to the Caliph Omar, after Justinian's death, will probably be convinced that it was then still held accursed. When Omar claimed, in accordance with the treaty, a place on which to build a mosque, the Patriarch Sophronius replied, "I give to the Commander of the Faithful a place where he may build a Temple, which the Grecian Emperors could not build" (alluding to Julian's attempt). He then goes on to describe the position of the Temple, and its form, which must at that time have been perfectly well known, and the Sakhra in the midst, which was certainly the Lapis Pertusus of the Bordeaux Pilgrim, and the corner-stone of the Jewish altar ("Temples of the Jews," pp. 191, 225). When, having obtained from the Caliph a written promise that he would erect *only one house* of prayer in Jerusalem,* Eutychius goes on to say, "For when the Romans embraced Christianity, and Helena, the mother of Constantine, erected churches in Jerusalem, the place of the rock [altar] and those adjacent to it were laid waste, and so left: and they threw dust on the rock, so that a large dunghill was heaped upon it, and the Romans did not reverence it, as the Jews had done, nor *did they erect any church upon it*, because the Lord had said in the holy Gospel, 'Behold, your house shall be left desolate'; and again, 'There shall not one stone be left upon another that shall not be cast down': on this account the Christians had left it lying waste, and had not erected any church upon it" ("Annales, ii., p. 284).

Now, bearing in mind that the situation and dimensions of the Jewish Temple must then have been easily recognised, and it can, in fact be proved from a long list of authorities ("Temples of the Jews," pp. 182 *et seq.*) that they were perfectly well known till at least after the Crusades, it seems impossible to assume that a Justinian church was then standing within the precincts of the Temple. It seems equally certain that when Eutychius wrote, the Moslems had not erected two places of worship in Jerusalem: in fact, that the Aksah was theirs and their only place of worship, which is confirmed by all we learn from all their other historians, while there is no mention of the Dome of the Rock as belonging to them at any age.

Besides, this placing the Justinian church inside the Temple area contradicts every word that is said by Procopius about the enormous difficulty the Emperor had, and the expense he went to, in getting a level foundation for his church. Where the Aksah stands, or, indeed, on any spot within the limits of the Temple area, all was flat and solid, and he need not have spent a penny on his foundations anywhere. What he really did we learn from Procopius. He brought up the level of the old deserted site of Solomon's palace to that of the Temple floor, and then erected his church, "Secus Porticum Solomonis," as Antoninus tells us, and there, the remains of its foundations may still be seen in the vaults now known as Solomon's stables.

The only remaining question is, why did Justinian seek this remote, cramped, and difficult site for his great monastic establishment, when he had the command of many others in other parts of Jerusalem far more convenient and much less expensive? I answer, unhesitatingly, because he wished his establishment to be near the Anastasis, the Martyrium, and other sacred sites of the Christians, and where it did afterwards form one of the four great churches of Jerusalem ("Temples of the Jews," pp. 238 *et seq.*). If any one has any other answer to give, all I can say is that it has not reached my ears.

A very few words will suffice regarding the Golden Gateway, which is the only other building noticed in this part of Lieutenant Conder's paper. He and all the rest of the world are now prepared to admit that it is a Christian building, erected between the ages of Constantine and Justinian. Lieutenant Conder says the fifth or sixth century. I still maintain, for reasons given in my "Topography of Jerusalem" (pp. 94 *et seq.*), and my "Temple of the Jews" (pp. 229 *et seq.*), that it was the festal portal erected by Constantine, and described by Eusebius as leading to his basilica. But even waiving this argument for the nonce, and assuming that I am wrong in this, I have asked over and over again who built the Golden Gateway, and why was it placed where we find it? We know the history of Jerusalem perfectly from the time of Constantine to that of Justinian, and not one author, either contemporary or afterwards, mentions the erection of such a building, either directly or indirectly, and no one in modern times has ventured even to try to explain why it was erected where we find it. Yet it is an important building, and evidently from its form and construction only a part of a group of buildings which must have been of greater importance than itself; and I hold it to be literally impossible that such a gateway, with its adjuncts, could have been smuggled into existence, without any one at the time or since being able to say by whom or for what purpose it was erected. The nearest approach to an answer is by the Count de Vogüé, who, quoting John of Wurtzburg, a writer during the Crusades, suggests that it was the Porta Speciosa, the Beautiful Gate of the Temple, and re-erected by Christians,—he does not hint when or by whom,—in honour of the miracle performed there by Peter and John in curing the lame man. The answer to this is, first, that the Porta Speciosa was an inner gate of the Temple, and this is not only outside the Temple and city, as his own plan shows, but did not belong to the Temple at all. Secondly, that at no time did the Christians ever attempt to rebuild any part of the accursed Temple of the Jews; and thirdly, the Porta Speciosa to which John of Wurtzburg alludes was on the west side of the Haram area. The Golden Gateway is on the east. This answer of the Count's will not, therefore, suffice, and till some one can suggest a better, my suggestion must be allowed to stand as the only feasible one. Simply ignoring the facts, as writers have hitherto been content to do, is no answer to any honest inquirer who is searching after truth, and that only.

I have now run through, as briefly as I can, all the most important points in Lieutenant Conder's paper, but though I have tried to do it in as few words as possible, I must apologise for having taken up so much time. The subject, however, is, to me at least, so important and interesting, that I could hardly omit anything I have said. What I have written on the subject extends to several volumes, and to make what I have to say complete, it ought to be nearly as long. I have, however, probably said enough to prove that there is a good deal to be said on my side of the question.

In conclusion, I can only add that I shall rejoice if this discussion leads to any practical result. Hitherto, the mode of treating the subject has been by nibbling over the smaller details on the outskirts of the argument, and ignoring the more important issues. I feel sure the Institute of British Architects will insist on a broader and fairer mode of treatment, and if that is applied, I have perfect confidence that the result will be the establishment of many, if not of all, the truths I have so long advocated.

A short rejoinder to this paper was read from Lieutenant Conder, who was unable to be present; and to this rejoinder Mr. Fergusson briefly replied, but no new points were raised on either side.

Mr. J. D. Crace said that, as a member of the Executive Committee of the Palestine Exploration Fund, he was much interested in the question, although he had no theories of his own with regard to the position of the Temple. He would, therefore, content himself with asking one or two questions. One was whether he correctly understood Mr. Fergusson's view to be that the southern wall of the Haram enclosure did not, in the time of Herod, extend so far as the existing south-eastern corner? If that were the case, he would ask Mr. Fergusson how he accounted for the angle stones at the foundations of that corner, which, to all appearance, were very ancient, being marked with Phœnician characters. He was informed that these characters might very well occur as late as the time of the Maccabees, and probably later, but not later than the time of Herod. If the wall did not extend so far as that, could Mr. Fergusson say what those stones formed part of? Did not the colonnade or portico extend so far, and if not, what did extend to that point? Another question he wished to ask was with regard to the measurements of the Temple given by Ezekiel. Ezekiel gave an enormous mass of measurements, which were, no doubt, intimately interwoven into Herod's Temple. One important point in Ezekiel's measurements was that in describing the measuring-reed (ch. xl. 5), he spoke of it as "a measuring-reed of six cubits long, by the cubit and an hand-breadth." And again, ch. xliii. 13,—"The cubit is a cubit and an hand-breadth." Now, taking the cubit at 18 in., and the hand-breadth at 4 in., each of those cubits would be 22 in. long, and when he said the outer walls measured 500 reeds round about, on each side (xlii. 20), it being evident that 500 cubits as given on the reed were meant, that would give a length of 916 ft. 8 in. on each side, the actual measurement being 922 ft. The "Middoth," as quoted by Mr. Fergusson,

* The passage is quoted at length in my "Topography of Ancient Jerusalem," p. 133, to which the reader is referred.

also says, "the mountain of the house was 500 cubits square." And the "Middoth" and Ezekiel both gave the altar as "twelve cubits square," whence it might be inferred that the same cubit was meant. Another remark he had to make was that, if he understood him aright, Mr. Fergusson placed the king's palace east of the eastern gate. Now, would not the existence of that building at that point distinctly interfere with that opening to the sun's rising, as Josephus called it, and would it not have been incompatible with the sun shining into the Temple through the eastern gate? Ezekiel, too, made mention of the top of the mountain in a way which rather led one to infer that that was the centre of the Holy of Holies. He says (xliii. 12), "Upon the top of the mountain, the whole limit thereof roundabout shall be most holy." One important point in considering Mr. Fergusson's contention that the Dome of the Rock was the site of the holy Sepulchre was the improbability that the Jews would have tolerated the execution of one whom they regarded as a criminal upon the summit of Mount Moriah and a spot immediately overlooking their Holy of Holies, and whether it was likely that a burial-ground would have existed within 100 ft. from that holy spot.

Mr. Maynard said that as he read Ezekiel he had come to the conclusion that the Temple was on the top of the rock. It was for Bible students to inquire where it was most usual to place a thrashing-floor, for the Bible distinctly stated that the Temple was built on the site of a thrashing-floor.

Captain Burton said he perfectly agreed with Mr. Fergusson as to the migration of holy places. There was an instance of it going on in the present day. The place of the conversion of St. Paul, near Damascus, was gradually working nearer to the road traversed by the French *diligence*, and he had no doubt that in a few years it would be upon the road itself. It was not surprising, therefore, that there was a difficulty in agreeing as to the exact site of the Temple. He himself had no opinion to offer on the question.

It was announced that the discussion would be continued on the 13th of January.

THE PLASTER WORKS AT VAUX.

THESE great works are situated in the river basin which contains Paris, and are among the most remarkable in all France. The geology of the neighbourhood is exceedingly favourable to this particular and important industry, and full advantage has been taken of it for the opening of what the French call "plaster quarries," many of which have, for centuries, lain with their surfaces bare, in the close vicinity of the capital; but, in the majority of instances, the superincumbent mass has been too thick to allow of this method being adopted, so that, as at Vaux, all the processes of ordinary mining, the sinking of shafts, excavation of galleries, and hollowing out of vast chambers, with roofs, supported either by massive timbers, or by cloister-like arches and columns of the natural material, have had to be carried out. The hill in which the Vaux quarries are burrowed rises abruptly from the bank of the river, with the flow of which the uppermost layers of gypsum are about level. Above these are heavy masses of marl, sand, mill-stone rock, and a thick bed of soil, covered with trees. Some hundred years ago the works were commenced, with a thickness of 90 ft. to deal with, whereas four times that depth has recently been discovered, developing an enormous trade. For, not merely do the builders of Paris, Mantes, Vernon, Rouen, and Havre, rely upon this apparently inexhaustible source of supply, but it employs also a special branch of navigation to the ports of Brittany, Bordeaux, Belgium, Holland, America, India, and even Australia. Gypsum, which rapidly decays under the influence of light, air, and rain, is well adapted for dark ships' holds, and requires only a slight preparation in order to be converted into most serviceable plaster. Formerly, considerable danger attended the working of the quarries, owing to the narrowness and steepness of the galleries; but of late the hill has been pierced by two tunnels, lined with masonry, striking two hundred yards through its interior, and carrying an ascending and a descending line of rails. These branch off in various directions through artificial arches and colonnades, until at their termination the entrance into the bowels of the hill is at least 1,200 yards distant. The transition from the ancient to the modern excavations is distinctly apparent in the change from rude and irregular clusters of pillars and huge hollows scooped out here and there, as if at random, to an order and symmetry producing architectural effects not a little imposing to the unaccustomed eye. The distribution of spaces excavated, and of masses left to uphold the roofs, is perfectly regular, and on no account are the quarrymen permitted to cut away so much as an ounce from that which is considered essential to the safety of their labour. These paths are not always straight and flat, but curve and undulate occasionally, according to the variations of the strata, and now and then are completely stopped by a wall, which indicates either that the vein, so to term it, has ceased, or that it has become dangerous. All, of course, would be utter darkness were it not for the feebly-burning candles carried by every miner, and the atmosphere is intensely cold, without, however, being damp. There is no drip from the upper surfaces, nor any efflorescence; and a peculiar characteristic of this underground region is the dead silence that generally prevails. Plaster-getting is by no means a noisy toil. Now and then, but not often, an explosion of gunpowder takes place, and there is a pretty continuous rumbling of the tumbrils rolling to and from the mouth of the mine, but the men, owing to the frequency of the intervening pillars and partitions, are necessarily divided into small gangs of from two to six at the utmost, so that nothing like clamour arises. The work to be performed, however, is not everywhere the same, for the material is usually found in two layers: one, the upper, soft, and capable of being loosened by the pick, and cut out easily; the other, or lower, extremely hard, very close-grained, of a dark colour, and rarely to be removed except by blasting. The second is the more difficult part of the task; the first the more anxious, since the very pliability of the material renders it a source of peril to those engaged. A favourite method of operation, when a promising mass of fine quality has been hit upon, is to cut a base across it, and then for two sets of men to hew diagonally towards a point, so as to separate from the rest a great triangular block, which, afterwards, is easily disintegrated. Wheeled platforms and levers are used to transport the *débris* to the stations where the wagons take them up, and where the "hammerers" break up the pieces that are considered too large. They are then tumbled into the cars,—bell-mouthed receptacles, drawn down empty, and tugged up full, by horses; these vehicles have no wheels, but are constructed in something like the fashion of sledges, and their velocity is often such as to necessitate the application of a brake. They never run off the rails, and are so solidly built that it is rare for even the most violent concussions to shatter them, though the weights carried by them are frequently stupendous, though in the downward trip they turn sharp corners at full speed, and though they are suddenly brought up, from time to time, to receive accessions of cargo at the mouths of the lateral passages. Arrived at the great tunnel of masonry, already spoken of, they are hooked on to an endless chain passing round an immense iron drum, the empty trains, by a system of checks, being contrived to balance the loaded; and thus, by an ascent contrived with extraordinary ingenuity, and with the least possible waste of power, little hillocks of gypsum, brought up from those remote depths, are piled along the edge of the forest.

Within this, deep holes are dug in straight lines; each, the work of only two men, furnished with the simplest of instruments, is about 10 ft. deep, and in them, by means of gunpowder, a certain proportion of the gypsum is reduced to powder, while the choicer qualities, destined for exportation, are set apart solid, loaded into special cars, and passed from point to point, with the utmost solicitude, until they reach the place of embarkation on the Seine,—nearly the whole distance being accomplished on inclines, without the assistance of locomotive draught power. But, while vast quantities of substance, dug from the quarries of Vaux, are sent abroad, in their raw, or rough state, vast quantities also are gathered at what is technically styled the "distillery" of Saint-Nicaise, which furnishes an article of commerce, in the form of plaster, baked and ground by a peculiar process. The baking, or burning, of the gypsum, indeed, is among the most interesting of the operations in connexion with these celebrated quarries. Dry though the substance be, to all appearance, when extracted from the heart of the hill, it nevertheless contains water, and the object is to draw this forth, if possible, to the last atom of a drop, until, indeed, a perfect crystallisation has been attained. In pursuit of this purpose, strange effects are sometimes created, as in those immense transparent slabs, vulgarly known among the miners as "the asses' mirror," the "table of speculation," and "the stone of Christ." Three walls, erected at right angles, inclose a space open in front, and support a thick iron roof; within this the stones are piled upon, but in a manner distinct from, each other, tending together until a rough arch is formed, and covered at the top with broken *débris* from the mine. Through this, fire is allowed to penetrate for from ten to twelve hours, when, completely desiccated, the gypsum is drawn forth, and pulverised, either in mills or by hammers. But, the fuel employed being wood, the heat is unavoidably unequal, so that the results cannot be depended upon to a certainty,—a part being excessively, and a part insufficiently, baked. To remedy this various expedients have been tried, including the use of twice-burned coke; but, with no particular success, though, of late years, more systematic methods have been employed at Saint-Nicaise. Upon arriving at the crushing works the stones are stopped by a sort of grating which only permits of a certain size and quantity passing through at a time, and the supply is regularly and incessantly kept up; men being stationed on either side, armed with mallets, to break up the pieces which are too large, and then allowing them to fall through a metal funnel into a zinc trough, the bottom of which is formed of thick iron bars, closely laid together, so that only the gypsum which has been sufficiently triturated can fall through. Meanwhile, a huge wheel, revolving upon an equally huge axle, kept in check by cogs, and weighted with heavy blocks of iron, passes over those stones which have resisted the hammer, and sends them rolling in wagons down a sloping platform that leads directly to the upper apertures of the calcining furnaces,—a great improvement, it will be seen, on the primitive plan, and suggestive of some progress in the manufacture of "Plaster of Paris." These furnaces are unique in their form, and in the principles of their action, consisting of a series of chambers of graduated heating force, until the term "red-hot" is reached. They are built of brick and metal, and the material to be calcined falls gradually through from the one to the other. Ordinary coke is here preferred to any other fuel, and the plaster-powder, therefore, comes out purely white, in which alone it is regarded as a commercial product,—without any of those various discolorations which might be expected from the employment of coal. At every stage, indeed, the utmost precautions have to be observed, and the utmost difficulties are encountered, in insuring the total absence of damps or acids of any kind, the very process of "dishydratation" being liable to evoke acidulate vapours from the metallic parts of the machinery. But the pulverisation is not complete yet. The powder descends from the furnaces into mills furnished with vertical stone wheels; thence it passes, or is "bolted," through finely-pierced iron sieves, and, the crystallisation being now, in its turn, entirely got rid of, the "Plaster of Paris" is perfect as an article of trade. Of course, not a few minute details, in a general notice like the present, have to be left out of view; but two or three points of interest remain to be remarked upon, among them being that in the Saint-Nicaise "plaster-foundry," if such a phrase applies, 100 cubic yards of "rough plaster" may be converted into "fine plaster," fit for the purposes of commerce, within twenty-four hours, intricate and numerous though the processes are, and that this particular manufacture is more free from the marly alloy, or "streakiness" than any other known,—on the Continent, at all events. Even it, however, is liable to sophistications, as by the admixture of salt, calcined indigo, and, indeed, every variety of white and pulverisable substance. But its modern uses are innumerable, and once extended to the manufacture of *papier mâché*, though kaolin is now its substitute in that sphere. All artificial stones, all artificial marbles, have it as their basis; it has been made to imitate ivory, and wrought into statues susceptible of a magnificent polish. It has been applied at once to the clarification of wines and to the manuring of land, by ink-makers, printers, moulders of every class, porcelain and faïence artists, the mimicry of

Sèvres, the fixing of mirrors to frames or walls, and, above all, to the copying of statuary. Without insisting that the Vaux works, in the valley of the Seine, constitute the centre of this industry, they unquestionably afford the best facilities, from an outside point of view, for studying and understanding it.

ABUSES IN HOUSE FURNITURE MANUFACTURE.

There are many vested abuses in connexion with trades akin to those other vested interests which an enlightened public opinion is gradually disturbing with a view to a better administration for the Commonweal. The holders and upholders of sinecures and pluralities in public appointments are still numerous, and, of course, wax irate if any reformer dare to question them, or to investigate the rule of their office. Our exposure of some of the abuses in the furniture trade, as might be expected, has not been well received in certain directions, and a shallow cry is raised of "spoiling trade," or injuring "a local industry" that has already to contend with opposition in other quarters interested in transferring the centre of a long-established trade from one part of the metropolis to another. Now cabinet-making, or furniture manufacture, is no more a local industry than house-building, and, like the latter, it has its ramifications wide and far, though certain localities or streets may have long contained a number of persons practising the trade. We are not interested in injuring the trade of one part of the town to benefit another, but are equally earnest in pointing out abuses wherever they may exist. "Scamped" work in the building trades has been continuously exposed in these pages for long years, and persistent condemnation has at last led to legislation, which is now making a wholesome though as yet only a partial improvement. In the furniture trade it is notorious that, for many years, "slop-work" has prevailed, and that to a most fraudulent and dangerous extent. Heretofore furniture manufacturers and sellers of the new and second-hand trade have had matters pretty much to their own liking, and this immunity has emboldened unprincipled members of them to impose still further upon the credulity of the purchasing public by palming off articles of furniture of a most deceptive kind utterly unfit for usage. From a serious and impartial consideration of the abuses in connexion with the furniture trades, we have no hesitation in saying that the time has long since arrived for holding a certain class of manufacturing furniture-makers and upholsterers amenable to the law for obtaining money under false pretences. A baker or butcher is punished for selling adulterated bread or unsound meat, and generally in the food and drink line the vendors are at any moment liable to an unwelcome visitor who takes a sample, perchance on the sly, for analysis. Chairs and tables are continually sold at present represented to be composed of a certain description of wood which they are not, and lady purchasers are generally the most often imposed upon. In the upholstery of chairs considerable artifice is evidenced, and in material, and colour, and tinsel ornamentation and finish, women generally fall victims to the garish show as the moths at night do to the gas or candle light. We made some general statements in our previous article in reference to chairs and their upholstery materials which have been doubted by some people, and even contradicted by manufacturers.

To place our statements beyond all cavil, we will furnish the result of a dissection of a sitting-room suite, comprising a couch, a gentleman's and lady's easy chairs, and half a dozen of ordinary chairs to match, &c. This suite is but one of many others of the same kind at present being extensively manufactured, and was sold to a lady purchaser a few months ago as made of fancy wood,—walnut-wood, if we remember aright. In the entire framing (seat, rails, legs, arms, backs) there was not one mortise or tenon, but single dowels. The wood of all the articles was beech darkly stained; indeed, it was in a manner grained as painters grain hall-doors and shutters, only by a different method of procedure, staining material being dabbed on, and the surface polished over afterwards. This "handsome suite," for which a liberal price was paid, was thoroughly dishonest in make and materials, and any practical man could see without much scrutiny that it was made to sell. The narrow fascia moulding planted on the lower part of the framing rails connecting with the legs and backs was in no sense a moulding, but a very flat half-round, with a ¼-in. gouge groove on its surface. Instead of being closely fitted to the curve or sweep of the chair and couch rails and glued, it was nailed on. Were it even a good fascia or fascia-moulding, no nails should have been used, and such a vile system of planting on would not have been tolerated a few years ago by any respectable cabinet or chair maker. No respectable house at present, we think, would give countenance to such a system. The cross-bearing rails of the couch were not an inch in thickness, and were framed into the sides with a single dowel. The rails should have been 1¼-in. or 1½-in., and instead of dowelling either tenons and mortises or dovetailing should have been employed. The upholstery of this drawing-room suite was the veriest "slop-work" that it was possible to conceive. Indeed, a whole detail of the manipulation would astonish the reader. Briefly described, however, we may say the couch, easy chairs, &c., were covered with rep, and, in common parlance, were "spring-bottomed." The rep had an edging of gimp to form a "genteel border" line of demarcation between it and the fascia moulding. The stuffing of the seat within was a composite of a variety of vile materials, of which the following was clearly discernible in greater and lesser quantities: alva marina, flock, list, ravellings of woollen and cotton stuffs, hay, in fact, rubbish of all kinds, but not an ounce of any kind of hair. The framing and workmanship of this drawing-room suite was not only bad, but in the instance under notice wedges of wood were inserted to make close joints between the shoulders of the tenons and their seats. The house from which the above furniture was turned out does a brisk trade, and the manufacturer has many brethren who are engaged in turning out wholesale a similar description of "fancy goods." Are we not justified in holding up to reprobation such a class of house-furniture wherever manufactured, whether in the East or West End? In chests of drawers, and marble-top washing-stands and dressing-tables, articles in which a good trade is at present done, the only bit of value and cleanliness of finish about them is in the marble, as far as some manufacturers are concerned. The framework of a large number of these half-round or semicircular stands is of the most flimsy and disreputable kind. They are mostly all deal, veneered with the exception of the leg or claw in front. The two back stiles or rails (uprights) are often half-inch deal veneered with a little quarter-round for a plinth or base moulding at foot. Once the marble top gets loose the stand soon loses its right to that title, and shortly goes the road of all "slop work." Cabinet, chair, and sofa work were once articles exhibiting good joinery, but to a large extent now bad single dowelling has taken the place of double dowelling and dovetailing, and screws and nails, with coloured putty, are unblushingly used in open places in lieu of mortises and tenons and good glue joints. We are well aware that excellent English house-furniture is manufactured, but the "slop-work" system, from reasons stated in our former article, is rapidly extending, and we fear if some steps are not taken to counteract a most dangerous abuse the cabinet trade will be ruined and the export trade in such goods destroyed.

While on the subject of furniture-making, it would be remiss on our part if we did not take some notice of the part that the second-hand furniture dealers play in the system of deception. The fact is, that the large second-hand furniture sellers and brokers are also makers of a large amount of the slop-work that is thrown into the market. Some of these men keep jobbing cabinetmakers and chairmakers employed not only for repairs, but for purposely manufacturing new articles to be sold, when finished, as "prime second-hand" furniture. Flimsy tables, chests of drawers, chairs, couches, &c., are manufactured on their premises or otherwise made for them by "slop-work" hands outside. This new work is, of course, made of the thinnest and cheapest materials in wood and upholstery. The pale-grained mahogany, however, is soon made to assume a deep brown or dark colour by the application of lime water. A little bit of lime dissolved in a basin of water, and applied to the mahogany or veneer surface transforms in a few moments the bran new gingerbread into a deep-toned "modern antique." A little polish afterwards, and dubbing and doctoring here and there, are quite sufficient for "taking in" all ordinary "flats," newly-married pairs, or old ladies out furniture-hunting. Who can resist "prime second-hand," little the worse for wear, articles which the seller assures them could not be bought when new for double the price asked? This new-second-hand furniture pays the seller better than if he sold it as finished undoctored. In fact, he fares better than the respectable manufacturer, and his profits are large. Here, then, we think that the honest portion of the chair and cabinet trade have a legitimate cause for complaint, and they should take some action for counteracting this fraudulent system. The selling of second-hand furniture is quite as unobjectionable a business as the trade in second-hand books if honestly carried out, but the manufacturing of slop-work and selling it for prime second-hand goods is simply an obtaining of money under false pretences, and the dealers should be held amenable to the law. The second-hand furniture brokers also perpetrate a number of frauds by their alliances and confederacies with a low class of auctioneers, who play into the furniture-brokers' hands at all sales and auctions. A few days before auctions of household furniture take place doctored, new, and second-hand articles of furniture are often carted at night from the second-hand brokers' shops and placed along with the goods in the house where the sale takes place. Picture-dealers and the sellers of objects of *vertu* play at the same game to no small extent and the "pot-boilers" of poor artists, who are often obliged to work for the Jews and Gentiles who murder the Old Masters without compunction, are knocked down for considerably more than they are worth. It is almost impossible for any respectable person to attend ordinary auctions of household furniture at present and buy articles at their value. The furniture and other brokers and the "Commission Men" will bid against all newcomers, unless you give one of them the "tip" before the sale, which means allowing him a certain commission for buying the articles you want. Many of our London auctioneers are completely in the hands of the furniture-brokers, and are obliged to some extent to study the interests of their constant customers. The unity of interests that exists between the lowest class of auctioneers and the furniture-brokers is close, and the auctioneers of this class are often furniture-brokers themselves. We often pity the fate of the poor householder,—the man with the large family, or the widow who is forced through necessity to auction her effects. She is generally well fleeced in the interests of the furniture auctioneers and brokers.

Reverting to the main question of furniture manufacture proper, the question arises, how is a reform to be effected? What is the best way to encourage improvement in execution?—for, without an improvement in this latter particular, design will only be utilised as an external to enhance the value of slop-work, and to further impose upon the credulity of the public. Art is very good, but in a world of artifices art can make but small headway if the workmen are arrayed against it, or so handled by their unprincipled directors or employers as to render its usefulness *nil* or of little avail. It rests at present, to a large extent, with employers of skilled labour to encourage, for their own sake if for no other, the execution of good work. In building materials and workmanship, where there is an architect, he has a voice, and, without being too exacting, he can make it heard for the credit of his art, and for the benefit of the future of skilled labour. In the house-furniture trade, except to a very limited extent, where expense is of little object, the architect is still powerless. An architect is generally the designer of his own works, but the furniture, manufacturer is seldom his own designer, at least in person; but even admitting that he is such, in general nobody stands between him and the purchasing public but the workman, who has little or no voice in the matters at issue. The connexion between an architect and his client is always direct, but it is only in cases of special orders, or where a design or special instructions are given, that the furniture manufacturer moves out of his ordinary groove. A client can find fault with his architect, and the architect can hold the builder responsible for serious breaches, but the ordinary furniture purchaser is out of court. He has bought with his eyes open, he was perhaps no judge of good from bad furniture,

and he must make the best of a bad bargain. There ought, we should imagine, to be room in this great manufacturing country for such a professional as a furniture expert, and perhaps the time is coming when the duties of such an office, at present unlooked for, may be thrust upon the architect. House designing and building of the better kind has of late years, in the interests of a certain class of clients, been setting forth more wants, requirements, and comforts at the hands of architects and builders. The owners or purchasers of new houses are yearly expecting something more than bare walls for their outlay or investment. A few fixed and permanent articles of household furniture and domestic appliances have already been provided in the better class of houses, from kitchen to attic. Even in middle-class houses and workmen's dwellings certain fixtures, drawers, lockers, and other articles of accommodation are provided before hand. As time advances, there will be further demands upon architects in every description of dwelling. Well-built and thick-walled country mansions and town houses afford ready facilities (if it be so wished) for architects meeting several wants, in the way of permanent furniture accommodation. To be sure, it may not be advisable to break the wall surfaces of large rooms into too many angles, but fashion is often stronger than statute law, and so long as recesses are provided by chimney-breasts, or other domestic exigencies, people will not be long in finding use for them. A family mansion or house, in the true sense of the term, needs that the furniture should be lasting and good, but most of our present-day movable furniture is neither one nor the other. Seldom, indeed, are our present-day houses, even of the better kind, in their plaster enrichments and painting decoration, in harmony with the furniture. Where the latter is not out of harmony with architectural finish, the general run of upholstery and drapery is. In fact, the man-milliner swathes all that is worthy of view from an architectural point out of sight, as if he were intent on proving that upholstery was necessary to the existence of architecture and human life, and that without it all rooms are but whitened sepulchres.

During the last thirty or forty years much joinery-work for internal finishing has been eliminated from our houses, and not always with the best results. In the majority of our middle-class houses the doors and windows are denuded of much of the elaborate trimmings that formerly gave an artistic appearance to the rooms in conjunction with the stucco and scagliola work of the ceilings and cornice mouldings, and the exquisite ornamentation of the mantelpieces, whether in carved oak, marble, or affixed scagliola. Panelled wainscoting, wooden cornices, surbases or dados, &c., have been given up, — in some instances with advantage; but what was permanent and real has been replaced by the rickety and movable nuisances of the modern furniture purveyor. Many of the dwellings of our people, instead of being comfortable homes, are converted into lumber-rooms, in which moving and handling is a danger, rest a risk, and contentment impossible. A constant misgiving haunts men's minds because fraud is rampant, and they know not how soon they may be undeceived, in what they paid dearly for in furniture, pictures, and other objects of art as art-workmanship.

We hope what we have written now, and in our former article, has been sufficiently comprehensive and clearly stated as to admit of no doubt. We have only touched upon the fringe or fringes of some great interlocked abuses, and by nowise exhausted a subject which is matted with gigantic frauds and honeycombed with commercial corruption.

Bust of the Late Thomas Wright, F.S.A. A subscription is on foot to purchase a marble bust of the late Mr. Thomas Wright, the property of Mrs. Wright, executed by Mr. Joseph Durham, R.A., and to place it in some public hall or library; and the proposers trust that, as the sum received will be devoted to the necessities of Mrs. Wright, it will not be limited by any reference to the mere artistic value. Subscriptions may be sent to Mr. Dillon Croker, F.S.A., treasurer, 9, Pelham-place, Brompton; or Mr. C. Roach Smith, F.S.A., Temple-place, Strood. The Prince Imperial has subscribed 10*l.*, and amongst those who have already sent their names, we find the Earl Powis, the Earl of Derby, Lord Houghton, Sir John Lubbock, Mr. Joseph Mayer, and others equally well known.

A MODERN ITALIAN WORK ON THE ART OF THE PAST AND THE PRESENT.

SIGNOR CHIRTANI, in a handsome volume recently published at Milan, "*L'Arte attraverso ai secoli*," has made judicious use of the prolific source of information in the field of art supplied to the world by numerous French writers; but Signor Chirtani himself is a critic too thoughtful and too original to merely popularise their ideas without some valuable reflections of his own. He has recognised that numerous additions were necessary, and that in passing over such a beaten track the utmost care and attention were obligatory. Everything shows us that Signor Chirtani is no new traveller on this familiar route. Thoughts such as are to be met with in these pages are not the mere result of hasty consideration, but that of a lifetime spent in the study of one subject; they are the patient analyses of the thoughts of contemporaries and predecessors, and, in one additional point, exceptionally valuable from his inferences being drawn, not so much from individuals and their ideas as from the epoch in which they were expressed, an historical precept followed by too few of the numerous writers on the past.

The result of such a study and intimate knowledge of so much that has been already said and thought, is an originality of view, the expression of which is in more than one case really refreshing in comparison with the so often written, so often read, praises of what the world has for centuries admired. Signor Chirtani shows no disposition to encourage preconceived ideas, whose influence he valiantly resists.

How often has the artistic world, or rather those who pretend to belong to it, wept over the lost beauty of classic times,—its Attica, its noble Doric temples and propylæi,—lamentations so often uttered, that the world at large has at length allowed itself to be persuaded that perfect art has for ever remained buried with Grecian architecture. Such prejudices Signor Chirtani in no way encourages; for him, art advances, just as human thought and human intellect have advanced since those far distant days.

In the art of antiquity, in the Celtic and Pelasgian art, one theme, one need, seems ever to have been uppermost—mere strength. True that the arch in its boldest form was known to the Pelasgians, the Assyrians, and the Greeks, but it was left to the Etruscans to understand its importance, and give it life. And this form of the arch, gradually growing bolder, our critic seeks it in every school, follows it to San Marco, to Sta. Sophia at Constantinople, in the cupola of St. Peter's, and in more modern times in the graceful lines of the Israelitish temple, now the National Museum of Turin. "A Greek," writes Signor Chirtani, "so far from carrying out, would not even have dreamt of such elegance, of such boldness, of such power, of contrast or of resistance, of action and reaction, so complicated."

When we have further wandered with the author among the works of the past, among the ruins and the aqueducts of Rome, we find ourselves in India, surrounded by its extraordinary Indo-Mussulman architecture; and then we follow the author into the consideration of the Byzantine and Latin architecture,—syntheses, as he terms them, of barbarism and grandeur, of light and shade, of the grandiose and the absurd, of the immense and the ridiculous.

Next we see the Lombard art, almost the exact image of that epoch in which, the Roman Empire ruined, Italy fell into barbaric anarchy. Further on we are presented with the beautiful creations of the Saracenic architecture "when the pollen of the Eastern flora deposited itself in the bosom of Lombard art, and the solemn mystery had for its sacred scene that most gorgeous of Mediterranean islands, Sicily," till finally we are brought in presence of the Gothic period, which for three centuries displayed its elegance, its miracles of construction, its spires and pinnacles, its buttresses, its lovely windows and ornaments, in which the most capricious imagination is puzzled and enchanted in the extreme delicacy of detail blended with the imposing, and at the same time severe, character of the whole.

This sublime art, says Signor Chirtani,—making use of a comparison at which, like ourselves, more than one reader will take umbrage, was as much superior to the antique as the pale features of Beatrice are superior to the flushed face of the Bacchante, as the wrinkles of St. Jerome, who weeps for the fate of Rome and prepares the way for a new civilisation, are worthy of greater respect than the graces of a decrepit Faun.

The dispute was an old one even in the days when Walpole penned his familiar praise of Gothic; the dispute none the less still wages, nor is it likely to be settled yet for many a year to come.

Italy in the fifteenth century is next presented to us, the creator of that gay art which drove before it Mediæval superstition, and, urging back the art of the North, returned to simple nature. We hurry through the decadence and rococo, noisy, restless, and glaring, and find ourselves at last in modern times. Severe is Signor Chirtani's judgment on their productions. Severe in particular, and with justice, when he bids us stop at "harlequinesque Munich," the synthesis of modern art, which shows us a pseudo-Pitti with a pseudo-Pompeian portico, with imitation Parthenons, and Florentine, Bramantesque, and Lombard models, with obelisks and Gothic spires, with Apollo and the tuneful Nine escorting the *debonnaire* Maximilian. We ourselves remember seeing in one of the principal squares of the city, and purporting to be the statue of Goethe, the familiar and noble figure of the Aristides.

Signor Chirtani closes this section with the fervent hope, one which in all countries is likely to be echoed, for an art which will be in accordance with the needs and thoughts of the present day.

The journey of the reader completed, among the monuments of architecture and the creations of the sister art of the chisel, our genial critic leads us to the masterpieces of the painters. We see how the noble art, having left the temple, is taken from the wall; we see the origin of the picture and the successive metamorphoses of the antique art, of which such rare fragments remain, its joyfulness, its beauty, the apotheosis of human form,—hidden, as was hidden the whole world, in the early centuries of Christianity, rising again with Giotto, breaking at length the charm of asceticism, and soaring to the utmost heights of elevated sentiment; rendered sublime in the glorious cinque-cento by Leonardo da Vinci, by Michelangelo and Raffaelle, by Giorgione and Titian, by Paul Veronese and Correggio, and then,—the sad decline. To Italy succeeded Spain; to Spain, Flanders and Holland; and Holland, Flanders, and Spain, indeed, all Europe, we fly over in this book, always in search of the finest works of art, from century to century, from picture to picture, from name to name, till we come down to Herkomer for England (which, in the author's limited knowledge, he seems to consider that of our only painter), to Regnault for France, to De Vienne for Belgium, to Alma Tadema for the Low Countries, to Makart and Knaus for Germany, to Jaroslav Cermak for Bohemia, to Mateiko for Poland, to Fortuny for Spain, and Tranquillo Cremona and Fontana for Italy.

Such is the outline of the work which unfolds itself to the student and the thinker. For the reader who merely wishes to regard the work as a "picture-book," we may say that almost every page presents the image of some monument, the design of some master-work, the reproduction of some famous picture. The volume, indeed, contains something more than 500 cuts, and one is able, without fatigue, and with a certain amount of profit, to pass in review all the marvels of the art of every country and of every epoch.

Ancient Monuments Bill.—In moving the second reading of this Bill (House of Commons), Sir J. Lubbock said that as the House had on several occasions affirmed the principle of the Bill, he thought hon. members would not wish him to enter into the subject at length on the present occasion. He would only observe that the principle of the Bill was that, after proper notice had been given, an owner of one of these monuments who wished to destroy it should, at least, give the country the option of purchasing it at a fair price. As regarded the constitution of the commission and other details, he did not ask the House to commit itself, though, for his part, he believed it would work well, but he should be most ready to consider any suggestions with reference to it in committee. He had adopted all the recommendations of the Select Committee which sat on the measure and also other suggestions for removing objections. The Bill was then read the second time.

EPPING FOREST.

It is now universally acknowledged that open spaces reserved for the exercise and recreation of all classes, at the centres of population in our cities and larger towns, are necessary and conducive to the health and happiness of the people. Not only philanthropists and those professionally engaged in the promotion or carrying out sanitary arrangements are urgent as regards this, but local and municipal authorities are alive to the advantages, and take pains to secure them for the public. Hence the formation of parks dedicated to the public use, and the demand for the art of the landscape gardener in the disposition and planting of the ground, so as to make them, in some cases, rival most successfully the most favoured demesne of the aristocracy.

The City of London has taken a most prominent part recently in securing in perpetuity the remains of Epping Forest, and wresting from the hands of unlawful possessors those parts which had been alienated from their original purpose. But now comes the question,—What will they do with it? This is no less an important matter than the original acquisition; for it is obvious it can be seriously mismanaged, and at least made nothing of, or be hereafter a reproach rather than an honour, by the way this splendid opportunity is to be wasted, or, on the other hand, improved, for the adornment of the forest and the advancement of arboriculture as a science.

This large open tract called "Epping Forest" is now intrusted to a committee (verderers) of the London Corporation, and they have to decide how it shall be planted, laid out, drained or not, and in other ways be made available for public use and enjoyment. The "capabilities," it is hoped, will not be now neglected, but, under proper guidance, developed to the fullest extent, so that the grounds may be instructive and useful as well as ornamental, and adapted to recreative purposes. In the November number of the *Fortnightly Review* all this is admirably discussed in an article, to which we desire to call especial attention, by Mr. Alfred R. Wallace, a name well known as a naturalist of the highest authority, and one who does not write without the necessary information and experience of his subject. The arguments used and the proposals made are deserving the attention of all who are interested in arboriculture, as well as citizens and visitors to the great metropolis. Mr. Wallace's experience was gained in prosecuting his researches as a naturalist in many parts of the world, and he is an acknowledged leader in that department of scientific inquiry.

Describing in his own words the plan which he recommends for planting and laying out the forest in a way which would be at once far from costly, splendid in result, certain of success, and capable of being accomplished within a very reasonable period of time, it is,—"One which would be perfectly novel, perfectly practicable, intensely interesting as an arboricultural experiment, attractive alike to the uneducated and the scientific, not more expensive than any other plan, and perfectly in harmony with the character of the domain as essentially a forest. It is, briefly, to form several distinct portions of forest, each composed solely of trees and shrubs which are natives of one of the great forest regions of the temperate zone."

Taking only one of these regions first into consideration, it is to be remarked that the forest trees of Eastern America number 155 different kinds against eighty-five of our European region, a large proportion of them being susceptible of introduction into our island. Here is an ample field for diversified groups of the most picturesque character. Quoting our author,—"Now let us suppose one of the most suitable of the open tracts recovered at Epping to be thus converted into an American forest in which as many trees and shrubs peculiar to Eastern North America, as we know to be hardy, are planted in masses and variously intermingled. Such an experiment would excite interest in every stage of its growth." Nor would the expense, it is calculated, exceed the culture of our own varieties of timber trees. Some of the foreign species are of rapid growth. This is the case with the Wellingtonia and the Douglas pine. Mr. Wallace justly observes, "Here, again, is no question of success. The experiment has been made already for us a hundred times over, and we have only to profit by it." Eastern Asia and Japan are represented as even richer than America in deciduous trees. There remain, our author proceeds to state, the temperate forests of the southern hemisphere, in Chili, Patagonia, Australia, and New Zealand. Many of their denizens are susceptible of acclimatisation in our regions. We have thus briefly indicated the nature and value of Mr. Wallace's contribution, which deserves the perusal of the members of the committee and of every person interested in the embellishment, and, not least, the useful and profitable occupation, of Epping Forest, but we must refer them to the article itself for his views as to laying out drainage, or rather avoiding too much drainage and other necessary details of the proposal.

C. F. H.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of this Institute held on Monday evening last, Mr. Charles Barry, president, in the chair, the following gentlemen were balloted for and declared to be duly elected, viz.:—As Fellows,—Mr. T. C. Hine, of Nottingham; Mr. George Gilbert Scott; Mr. John Wynne, of Manchester; Mr. George Bell, of Glasgow; Mr. William Millican, of Leicester, president of the Leicestershire Society of Architects; Mr. H. L. Florence, president of the (London) Architectural Association; and Mr. George Wilkinson, of Dublin. As Associates,—Mr. C. A. Monday, of Croydon; Mr. H. A. K. Gribble; Mr. W. W. K. Clarke; Mr. H. G. Brace; Mr. H. Tanner; Mr. F. E. Eales; Mr. S. F. Williams; Mr. H. B. Rowlatt; and Mr. R. E. Powell. As Honorary Associates,—Mr. W. H. Barlow, F.R.S.; Mr. John Hopgood; Mr. W. S. Inman (past vice-president); Lord Elcho, M.P.; Sir James Watson, of Glasgow; Mr. R. Bruce Bell, C.E.; Lieut.-Col. Chesney, R.E., president of the Royal Indian Engineering College; the Earl of Carnarvon, president of the Society of Antiquaries; Mr. John Murray; Mr. W. Harry Rylands; Sir W. E. W. Gregory, bart., M.P.; Mr. William Hardman; Mr. Hugh Leonard, C.E.; Lord Henry Scott, M.P.; Mr. John Penn, C.E.; the Dean of Norwich; and Mr. H. C. Coote, F.S.A.

There were thus elected thirty-three new members, a number without precedent, Mr. Barry believed, on any previous occasion.

The President announced that M. Davioud, of Paris, had written thanking the Institute for electing him an Honorary and Corresponding Member; and that the President of the Société Centrale des Architectes de Paris had written in the name of that body expressing great regret at the death of Mr. Cockerell. Mr. Barry further stated that the Council had ventured to send a special letter of condolence to Mrs. Cockerell, signed by him as President in the name of all the members. He also stated that as her Majesty the Queen was the patroness of the Institute, the Council had thought that some expression of sympathy with her Majesty, who was now in deep sorrow, would not be unacceptable, and he was quite sure that the members would approve of the Council's proposal to send a letter sympathising with her Majesty in the great loss she has just sustained.

The discussion on Lieut. Conder's paper on "The High Sanctuary at Jerusalem" was then proceeded with. We give a report on another page.

Captain R. F. Burton then read a paper on "Remains of Buildings in Midian." Of this we shall print the substance in our next.

The President announced that the next meeting of the Institute would be held on January 13, 1879, when the discussion on Captain Burton's paper would take place, and the discussion on Lieut. Conder's paper resumed and concluded.

Technological Museum for Sydney, New South Wales.—We are informed that the Government of New South Wales has requested Mr. William Forster, Agent-General for the Colony, Professor Liversidge, of the University of Sydney, and Mr. E. Combes, M.P., C.M.G., to collect information in the United Kingdom and on the Continent relative to the working of English and foreign technological museums and colleges, with a view to forming similar institutions in Sydney. A sum of money has been placed on the estimates by the Government of the colony, to enable the committee to purchase suitable specimens.

CHRIST CHURCH, NEUILLY.

THE ENGLISH IN PARIS.

Christ Church, Neuilly, has been built under somewhat different circumstances from those of most churches.

One usually finds mission work the outcome of the Church, but in this instance Christ Church is the outgrowth of mission work. It was on the 20th of December, 1872, that Miss Leigh first opened her Mission Home at 77, Avenue Wagram, being impelled to make this effort from the gift of a Scotch girl of 10d.,—1 fr.,—"a gift of faith and love"!

The work grew so rapidly, that some eighteen months after, Miss Leigh undertook the purchase of the whole house at a cost of 10,000*l.*

On May 9th, 1875, the whole of this amount was paid down, and the large house, consisting of some seventy rooms, was divided into five separate homes, being (1) a home for daily and unemployed governesses, (2) a home for girls who work out by the day, (3) a home for ladies' maids and nurses, for all of whom free registry is kept, (4) a sanatorium for the sick, (5) a *crèche*.

Some 1,500 of our young country-women have been admitted into the Home, and over 22,000 visits received from them.

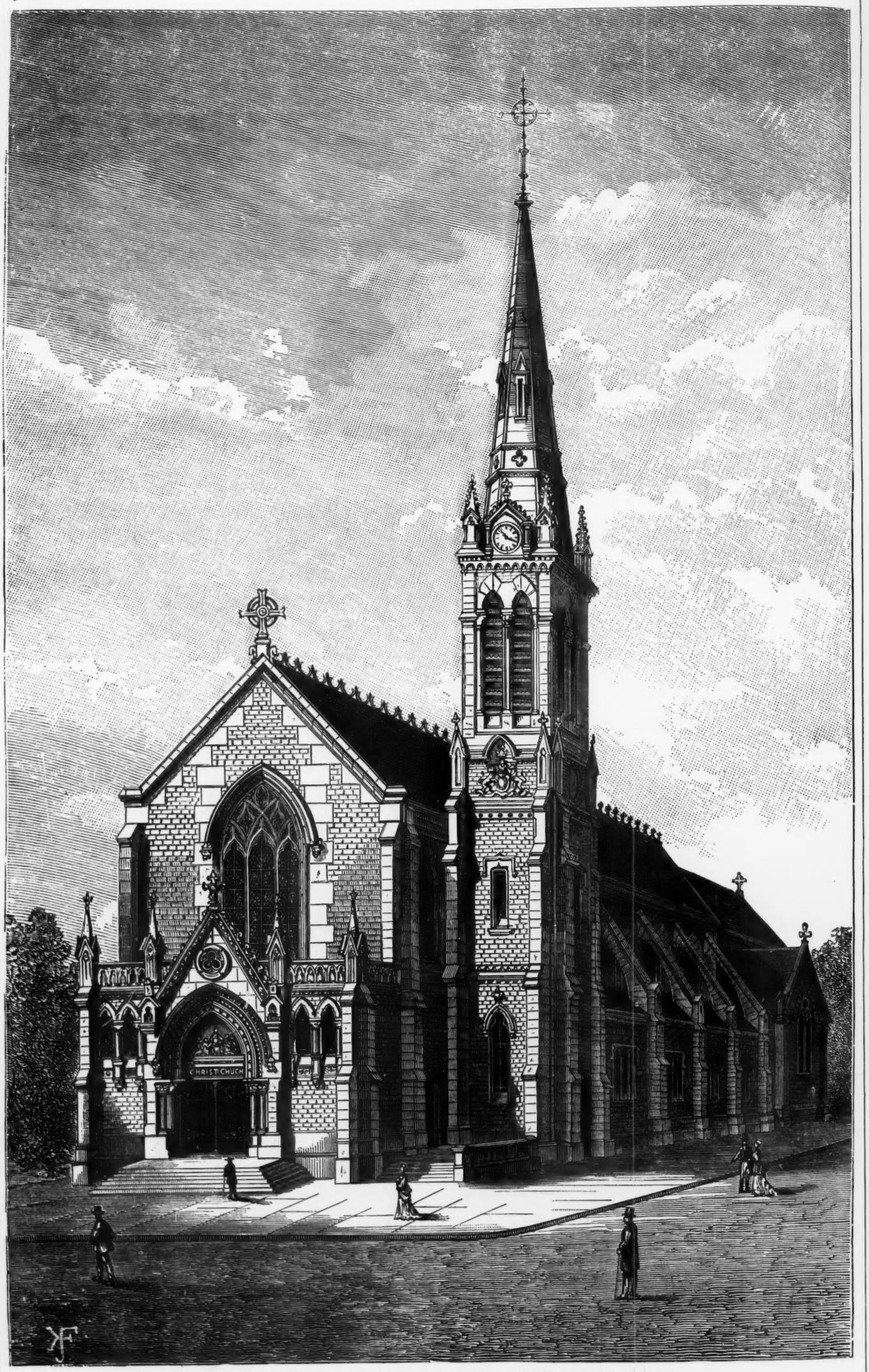
Within a few months after the commencement of her work, Miss Leigh's attention was called to the number of orphan and otherwise destitute English children in Paris. In July, 1876, about eighty of these children had passed through her hands, some of whom had been restored to friends, others sent to Schools and Homes in England, twenty-four still remaining under her care, when M. Galignani, hearing of the crowded state of the Mission Home, most graciously offered his Hospital in the Boulevard Beneau, Neuilly, as a more suitable home for the orphans. This munificent gift was ratified October 25, 1876, M. Galignani expressing to Miss Leigh his knowledge of the need of her work, and his high appreciation of her administrative power.

The Orphanage has a household varying from forty to forty-six, and perhaps Paris has no more touching sight than these orphans, with histories differing in circumstances, though not in need, sitting two and two up the aisle, in the church that has sprung up within the last few months; commemorative of a "work of faith and love," which has been wonderfully crowned and blessed.

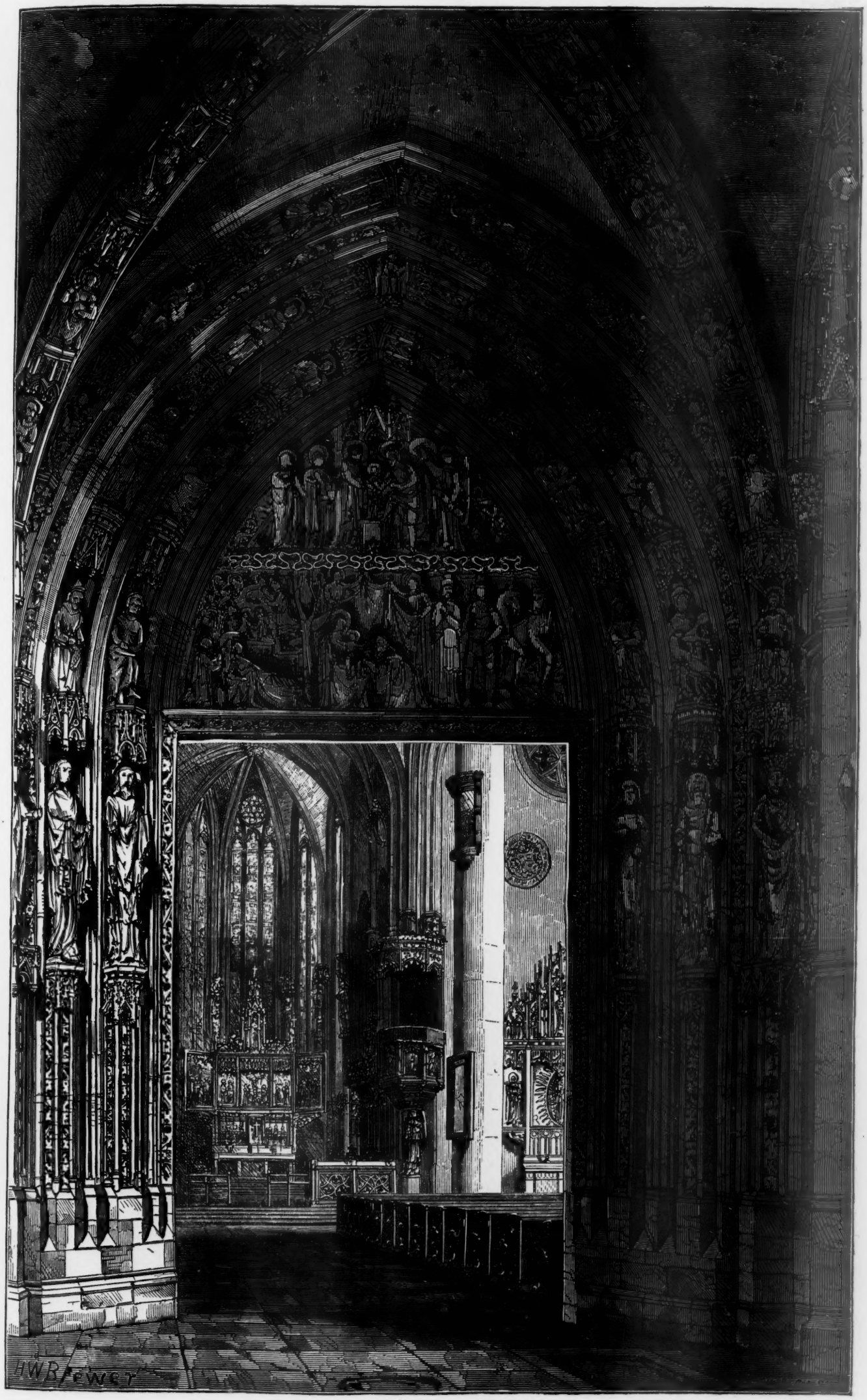
The total number of children who have now been received and helped over a time of need is 166. Between the Mission Home and the Orphanage 130 of our country-women and children are daily provided and cared for. It should be added that a soup-kitchen has also sprung up close to the Mission Home, where, during last winter, a total of 2,734 English women and children, and sick, received portions of meat, bread, and soup.

About a mile from this Home, in different directions, are the Christian Association Rooms, 88, Faubourg St. Honoré, and 33, Rue de Morny, giving a comfortable Sunday home, where food is provided for numbers of English girls who are homeless upon that day.

To return to the church, which is built on the confiscated property of the Orleans family, and in the neighbourhood of the desperate struggle that took place between the Versailles troops and the Communists,—Christ Church, Neuilly, charmingly situated at the corner of the Boulevards Eugène and Beneau, where five avenues meet, and which is only partially finished. Its style is mainly Early English, with occasional transitions into that of a later date. Its western façade has a belfry-tower at the southern angle. The interior consists of nave, side aisles, and choir, with a flight of steps up to the communion-table at the east end. Spacious clearstory windows of three foliated lights light the nave, and similar ones the side aisles. All the sittings will be free and open, without exception, the offertory alone being looked to for supporting the church. The architect, Monsieur Leroux, made two or three journeys to England for the purpose of studying its church architecture. The Prince and Princess of Wales laid a memorial-stone in the chancel on the occasion of one of their recent visits to Paris. The church, when finished, will comfortably seat 650 persons, and is to cost 8,500*l.* Of this about 3,200*l.* have been raised, and paid over to the *entrepreneurs*, who claim one-half the cost during the continuation of the works, and the other half within six months of its completion.



CHRIST CHURCH, NEUILLY, FRANCE.—M. Leroux, Architect.



THE FRAUENKIRCHE, NUREMBERG.

About 400*l.* a month are therefore needed to keep pace with the pecuniary needs of the church-building fund, which must be looked for mainly from friends in England. Although there is a large and growing English population (already estimated at 1,500) at Neuilly, yet from its nature, not much substantial help from it can be counted upon. First, there are many schools in which are to be found a certain number of English pupils; secondly, many private English families, to whom such a locality presents more attraction than it does to French people in general; and thirdly, and above all, there are many English *employés* and workmen who are compelled to seek there lodgings for themselves and their families less expensive than in the more central quarters of the town. All these together undoubtedly form a population, both larger and in general more necessitous than that for which many English churches have been erected on the Continent. It is equally certain also that the great majority of this population would never be induced to frequent English churches so far off as those which already exist, even supposing they could find room in them, which can now hardly be said to be the case.

It need scarcely be added that, although simple and not costly for the high purpose to which it is intended, Christ Church, Neuilly, is the only really ecclesiastical structure which the English possess in Paris.

Springing up as it has from the tiny seed of faith and love planted scarcely six years ago, and round which are gathered the branches of what M. Galignani justly calls "a representative work of the English nation at Paris," Christ Church, Neuilly, appeals to the Christian patriotism of the English at home to prevent the possibility of any debt being incurred in its erection, and to maintain with due efficiency various agencies for good to all classes of our country people needing help, in one of the most luxurious cities in the world.

Subscriptions may be sent to the church-building fund, Neuilly, Paris; Messrs. Barclay, Bevan, & Co., 54, Lombard-street; or to Miss Leigh, 77, Avenue Wagram.

THE FRAUENKIRCHE, NUREMBERG.

IN any less wonderful town than Nuremberg the Frauenkirche, or Church of Our Lady (the chief Roman Catholic church in the town), would be looked upon as a most remarkable building. It is, however, so far surpassed in magnificence by the churches of St. Sebald and St. Lawrence, that it is often overlooked by visitors to Nuremberg.

The Frauenkirche is by no means a large building. It consists of a short nave and aisles divided into three bays; the aisles are the same height as the nave, and the whole is covered externally by one vast roof. The chancel is without aisles, and is four bays in length. At the east end is a three-sided apse.

The west front of the Frauenkirche is a beautiful composition, with a projecting porch in the centre, over which is a small chapel. This portion of the church is said to be the work of two brother architects, of the name of George and Fritz Rapprecht, between the years 1335 and 1361.

The interior of the porch is very rich, and shows a very uncommon treatment of the vaulting ribs. These ribs are unusually large, and have canopied niches running up their face. The sculpture which adorns this portion of the building was the work of Sebald Schonhofer, and dates from the year 1355 to 1361.

The furniture of the Frauenkirche is, however, far more interesting than the structure itself. The high altar is a remarkably beautiful work of the end of the fifteenth or commencement of the sixteenth century; the reredos consists of a large triptych beautifully painted in a style much resembling the works of Martin Schoen, the name of the artist, however, is not known. The stalls are also well worthy of notice. The pulpit is of stone, and is probably a work of Sebald Schonhofer. There are two other ancient altars in the church, one of which, known as the "Tucker'sche altar," is considered to be one of the finest examples of a painted triptych altar in Nuremberg. Against one of the columns is a splendid basrelief representing the Madonna surrounded by worshippers,—a noble work by Adam Kraft; and against one of the walls is another fine bas-relief, representing the coronation of the Virgin, which is *attributed* to Kraft, but there is some doubt as to its origin. There is some good stained glass in the east windows, and at the west end of the aisles are two genuine fifteenth-century galleries of oak, well carved.

CURRENT MOVEMENTS.

THE address to the members of the Manchester Architectural Association by Mr. Thomas Worthington, president, to which we alluded at the time of its delivery, has been published. In the course of it Mr. Worthington says:—We live in the centre of a great population—some half-million inhabitants in Manchester itself, and probably quadruple that number in the district surrounding it. This vast multitude must be provided with roofs over their heads; and where every branch of industry and activity developes some special needs of its own, there must be endless opportunities for the exercise of ingenuity and design. All cannot be employed in the erection of great public works, but surely there must be ample scope for a good class of design, even if not of the highest artistic quality. Every workshop, every mill, every cottage may be in good taste, and expressive of its purpose; and in going through the streets of any great town it must be obvious that the services of an architect are by no means always called into requisition, where practical and intelligent advice might have produced very different results without increased outlay of money. It is true that in our warehouse architecture a great movement has been made, and a great improvement taken place, so much so that very shortly the old dingy brick Manchester streets will have been entirely rebuilt, and hardly an old landmark be left. It seems to me that in ours as in other professions, perhaps the best opening a man has, not only in forwarding his own fortunes, but in doing high-class work, is by taking up specialities. Besides churches and schools, hospitals and warehouses, there are endless fields of labour open, and the rising generation of architects may with advantage devote their special attention of some of the new combinations which are being constantly evolved in the stirring life of our great centres of activity. When one looks back for a quarter of a century and sees the vast changes which that period has made in many of our industries, one cannot but surmise that great movements must take place in the future.

I told you last year something of the experiences of my student days, how in the streets of Paris and Rome there were no footpaths, no plate-glass windows, no light except the dim old-fashioned oil-lamps in the streets, and now that has all changed. No one can have visited Paris this year and seen the Avenue de l'Opéra lighted by its forty-five large electric globe lamps without feeling that sooner or later, at all events for great public squares and open places, or where great concentration of light is required, this must eventually supersede gas, in spite of its costliness. And just now, as you all know, an intelligent and well-known American inventor claims to have solved the problem of dividing and distributing the electric light in such a manner as to make it available for ordinary domestic purposes and at a moderate cost. I mention this simply to show how the advance of science modifies and changes our habits and requirements, and it is only necessary to look round to see that in many ways the growth of our populous towns is giving rise to new modes of construction and new applications of material in building. The enormous and daily-increasing traffic of our streets with the introduction of tramways, which must become more and more general, will, in my opinion, develop a new phase in our street architecture. Underground railways may partially relieve traffic, and we shall doubtless be compelled to resort to other methods.

Our Transatlantic brethren have lately introduced an overhead or "elevated" railway, which carries an enormous number of passengers through the streets of New York, the rails being supported on iron columns, and the height of the erection is just sufficient to allow curious passengers to pry into the interior of the houses, to the great annoyance and inconvenience of the inhabitants, to say nothing of the constant rush and scream of the trains and engines, daily and nightly, or of the constant dropping of red-hot embers and sparks of fire, which are said to keep the poor residents in New York in a state of chronic anxiety and uneasiness. Well, in old-fashioned England, I hardly think we are likely to introduce such a "passing annoyance," as the New Yorkers facetiously call it, to destroy the calmness and tranquillity of our daily and nightly lives, but it is highly probably we may be compelled to invent some method of relief as the unceasing activity of our crowded thoroughfares becomes, as it does year by year, more complex and embarrassing.

It has often been a matter of astonishment to me that in all the improvements which are being made from time to time in forming new lines of streets, no attempt has ever been made to carry an upper-galleried footpath, at the first-floor level, over the ordinary footpath, with bridges across at the intersections of the streets and staircases occasionally (somewhat after the manner of the galleries in the Crystal Palace and some of our other exhibition buildings). Such galleries might either be of light construction or more on the principle of the Rows at Chester, and many of the arcaded Continental towns would afford valuable hints. Columns supporting the galleries might be so arranged as to serve also as pillars for gas-lights, and might further be utilised as shafts for the purpose of ventilating the drainage, a question which is daily gaining importance, and which must, sooner or later, be fairly grappled with. Such ventilating-shafts would thus be at frequent intervals, and probably some mechanical means might be devised which should compel the poisonous vapours from the drains to pass through the gas flame and become partially neutralised. At all events, such an arrangement would, if it accomplished nothing else, discharge the noxious gases from our drains above our heads instead of under our noses.

Such an arrangement as that I have attempted to describe would doubtless lead to the introduction of a story of shops on the gallery level, and ladies would then be able to do their shopping without the constant terror of being run over at the crossings, while the busy stream of heavy traffic would pass on below where shops of a more solid business character would probably find their location. So great a change could, of course, only be attempted when some great public improvement might be in progress, but opportunities offer, from time to time, in every large town, and especially in modern and active communities like those in our own neighbourhood. I should think with the increasing necessity for economising land some such plan may not become unusual, and, indeed, in the Barton Arcade and the Victoria-street Buildings a step in the direction I have suggested has already been made. In Milan a very large arcade on this principle, called the "Galleria Vittorio Emanuele," has been attempted with considerable success, and here the architectural design and decorations have been very carefully studied, as well as the constructive features. There is no carriageway, but a very broad and magnificent avenue which is a public promenade, and during the evenings gaily-dressed crowds sit in Continental fashion outside the doors of the *cafés* and restaurants, of which there is an abundant supply in the arcade. Paris also has several galleried arcades, but not on so large a scale as the one at Milan, which is the most important structure of the kind I know in Europe.

Building operations generally in our more important towns have, of late, assumed larger and larger proportions, the principle of association and co-operation has been very generally adopted, and we find companies formed for the building of enormous hotels, theatres, club chambers of various kinds, club offices, club residences, and associated dwellings on flats for both upper and lower classes; such undertakings being yet only in their infancy, the rising generation of architects will have ample scope for the exercise of ingenuity as the complex requirements of our social life become more and more developed.

Some little time ago some suggestions were made by Professor E. M. Barry, which were favourably commented on in the *Times*, and may therefore be regarded as not unpractical or Utopian. Mr. Barry thought that much waste occurred in squares of mansions in London by each residence having its own separate cooking establishment, and that great economy might be exercised by placing a large common kitchen, with a very complete apparatus for cooking and ample staff of servants, in a basement in the centre of the square, with every appliance for the distribution of the food by an underground service to each mansion, and proper lifts to the butler's department; in fact, a sort of club

arrangement to minimise labour and space, and so that when the morning orders for the day have been given by the housekeeper no further trouble would arise, and the smells of the cuisine would be cut off from the dwelling-rooms. I think it was a part of the suggestion that the usual garden should be converted into conservatories, easily heated from the kitchen and masking any unsightly chimneys or skylights,—an arrangement which would probably, at all events during a large portion of the year, be more enjoyable than gardens of blackened evergreens.

THE LAST OF THE THÉÂTRE ITALIEN IN PARIS.

To all art-lovers, the last news that reaches us from Paris is sad indeed; we learn from the *Perseveranza* that the Théâtre Italien has ceased to exist there, and that a few days ago the contract was signed which hands over the familiar old establishment of the Rue Mehul to the company *La Foncière*. The news will be sad to all lovers of music, but especially to the Italian colony at Paris, and, the correspondent of the *Perseveranza* might have added, to the whole foreign colony and winter visitors of the capital.

A long series of failures has led to this result. The proprietors of the theatre, who for the last eight years have never been able to secure with certainty the lease of their house, have at last been obliged to consult the dictates of their own interest; and few can otherwise than sympathise with them.

The house was one of the most agreeable and commodious in Paris, where the refined society of the capital met on the most delightful terms; it cannot but be greatly attributed to their indifference, however, that one of the treats of the winter season in Paris can no longer be looked forward to. It was the only house where ease could be enjoyed, the communications and places all being excellent, and equally suited to the means of all.

It was here that during the long time that it took to build M. Garnier's gigantic opera-house, was the French opera played on alternate nights with the Italian company, and those who have heard as we have, "Don Giovanni," in both houses, will remember how much more one enjoyed that magnificent work interpreted by the Italian company than by the French, and it must not be forgotten that it was under the Italian management that Paris was introduced to Verdi's last triumph, the Egyptian "Aïda." Older opera-goers will recall that it was at this house, also under the Italian management, that Grisi, Lablache, and Rubini, that splendid phalanx of musical talent, first appeared so far north, and here also, in accordance with the custom in Paris, whenever foreign actors have appeared the house was generally lent to them, and here Macready and Helen Faucit appeared in their famous parts.

THE UNPRECEDENTED DEPRESSION IN TRADE.

The severe commercial depression which has existed for so long a period is now affecting very seriously not only the building trade, but almost every branch of constructive and other industries throughout the country.

As regards building operations a general reduction of wages seems now to be almost the rule. At a recent meeting of the master builders in *Blackpool*, *Lytham*, and that part of Lancashire, it was resolved to reduce the wages in the various building trades 10 per cent.——A similar meeting has been held at *Hastings*, at which fourteen firms agreed to reduce the wages of plasterers 1d. per hour, and other trades ½d. per hour.——At *Banbury*, the wages of carpenters and joiners have likewise been reduced.——In the brick trade at *Sittingbourne*, the depression is also being actively felt. There is little or no demand just now for bricks, whilst the market price has fallen considerably, and the manufacturers are consequently retrenching, and reducing the wages of their workmen, whilst other men are being discharged. One of the largest firms of brickmakers has been compelled to discharge several of its best workmen; and the ship and barge builders have also discharged a large number of artisans of this class.——At the well-known Longridge Stone Quarries, near Preston, in Lancashire, the time of the workmen has been reduced from nine hours a day to seven and a half hours per day, and the wages from 5s. 6d. a day to 4s. 0½d., or from 30s. 3d. to 22s. 5½d. per week.——Owing to the depression a large number of men have been discharged from the *Caithness Paving Company's* works and quarries. This company's works form the staple industry of Caithness-shire.

The iron trade is likewise most severely feeling the depression. At *Stoke-upon-Trent*, the *Chatterley Iron Company* have for the present discharged no fewer than 900 men, and great distress is being felt.——In the *Cleveland district* the distress is also manifesting itself amongst the ironstone miners, in consequence of short time having been resorted to, and one of the largest mines,—Rosedale,—which has an output of over a thousand tons of ironstone daily, has been closed to allow the immense stocks of ironstone which have accumulated to be wrought out. The re-opening of the mine is not settled, as, if trade is no better, the furnaces may be blown out.——In *Sheffield*, the distress and destitution are appalling. As a proof of the scarcity of work, it may be stated that at one establishment where formerly 1,200 men were engaged, now only forty are employed. It is also feared that the Government contracts for plates have left the town, inasmuch as the large firms cannot compete with Barrow, Middlesbrough, Swansea, and some other places, which have the advantage of carriage by sea. The last contract for 20,000 tons of plates went into South Wales, which involved a loss to Sheffield of 300,000*l*. Hundreds of the working people are living in houses stripped of furniture, without fire, and many have to go without food for days.——It is understood that most of the ironmasters in *Manchester* contemplate effecting a considerable reduction of wages in every branch of the trade.——A circumstance attending the recent offer for public sale at *Middlesbrough* of the Liverstone Ironstone Mines strongly indicates the disorganised condition of the iron trade in Cleveland. The bidding for the complete estate, mines, and plant, began at 45,000*l*., and slowly rose to 50,000*l*., when it was knocked down to a Mr. Graham for the debenture-holders, who are deeply interested. The estate is said to be worth 150,000*l*.

The great Fenton Colliery Company, at *Stoke-upon-Trent*, in which the Duke of Sutherland is a large shareholder, have resolved to close temporarily, and have paid off all hands to the number of 300.——Owing to the continuance of the strike, the *Denaby Main Colliery Company*, near *Rotherham*, are obtaining orders from magistrates for the ejectment of colliers occupying the Company's cottages.

At *Hartlepool* there has been a reduction in the wages of the engineers, firemen, and seamen employed in the shipping trade, freights of vessels being abnormally low. Similar reductions have been notified in other parts on the east coast.——Accounts from *Sunderland* state that the iron shipbuilding trade on the Wear is very dull, and that a discharge of large numbers of workmen is contemplated.

The Cotton trade in all parts of Lancashire shares in the general depression. At *Haslingden* short time and a reduction of wages from five to eight per cent. has taken place.——In *Rochdale* a reduction in wages of ten per cent. has taken place, whilst in *Blackburn* the accounts state that things are going from bad to worse, and that three large firms are stopped by bankruptcy.

In several of the woollen factories in Yorkshire, short time has commenced in consequence of the dulness of trade; including *Huddersfield*, *Leeds*, *Darlington*, and other places.

At *Leek* and *Congleton* great distress is felt owing to the extraordinary falling off in the silk trade. It is stated that in *Congleton* several families are starving.——At *Chesterfield* it is stated that there never was greater distress than there is at present—that people have not clothes to wear, and are compelled to lie in bed in consequence, and that in some parts of the district people who were formerly well to do are literally starving.——At *Wednesfield*, owing to the depression of trade in the town and neighbourhood, some hundreds of working men are walking about the streets unemployed.

Several of the railway companies are likewise suffering from the depression. The *London and North-Western Company*, which employs about 7,000 men at their works at Crewe, now close their works the whole of Saturday, and do not open until nine o'clock on Monday, the reduction of the hours of employment being 7½ hours per week for each man.——The *Midland Company* have also reduced the wages of men working under them in the capacity of labourers 1s. per week, and announce their intention of reducing the wages of porters of all descriptions, policemen, carriage-cleaners, number-takers, &c.——The *North-Eastern Company* have reduced the rates of wages paid to the fitters and labourers by 1s. per man weekly.——The whole of the operatives of the North Staffordshire Railway Locomotive and Carriage Works at *Stoke* have been placed on short time, which is the first time such a step has been found necessary since the opening of the railway.——The *Furness Railway Company* have intimated to their workmen that a reduction must be made in their wages to the extent of 5 per cent., or that they must return to the system of fifty-seven hours per week.

ENGLISH AND FOREIGN WORKMANSHIP.

The first result of the visit paid by English workmen to the Paris Exhibition comes in the shape of "Reports of the Liverpool Artisan Delegates to the Paris Industrial Exposition of 1878 (Liverpool: Lee & Nightingale), a pamphlet of forty-three pages, containing reports on bookbinders, boot and shoe makers, bread-makers, confectioners, &c.; cabinet-makers, coopers, engineering pattern-makers, gilders, letterpress printers, and ropemakers.

Each artisan was requested to devote at least seven days, inclusive of travelling, to an inspection of the Exhibition, and of the manufacturing establishments in the city of Paris, where the special work in which he was interested was carried on.

According to the reporters, "we have no reason to fear that we shall be unable, in the future, to keep our due place as an industrial and manufacturing nation, if we all heartily unite in the promotion of general and technical education, steady and conscientious work, and friendly relations between employers and employed." They all seem to agree that English workmen can hold their own against the workmen of any other country.

The writer of the "General Report" (E. Jones), which precedes the others, gives a few facts in connexion with the domestic condition of the unskilled labourer of Paris:—"He is found living in overcrowded upper attics, in a condition of poverty which must be seen to be understood, but which is unaccompanied by squalor and filth. The best-paid artisans rarely occupy more than two rooms, and the furniture as a rule is very scant, but very clean and neat. There is no convenience whatever in their apartments for either cooking or washing.

The sanitary condition generally is most defective. I visited block after block of barrack-like houses, and found the "cabinets," as they are called, in a condition which, for stench, would put Widnes to the blush. The rent in these dwellings is from 250 to 350 francs per annum.

The public laundries of Paris are invaluable to the poor, and for excellence and cheapness outrival anything of the kind we have."

We take a passage from the Report on Cabinet-making (by Peter McStay):—"Turning my attention to the general cabinet trade of Paris, besides the letters of introduction I received from the British Commissioners to employers, I received, while passing through London, from the General Secretary of the Alliance Cabinet-makers' Association, letters of introduction to several members of the Continental Branch of that Association, working in Paris. I was received with the utmost cordiality in the shops I went to, and a desire was expressed that I should fairly understand their system of working. In most shops there are men who have worked in London, and other parts of England, many of whom could speak English tolerably well. From them I learned that in the majority of shops the system of working is piece or lump work, that they have no general day for the payment of wages, some shops paying weekly, others fortnightly, and some every third week and every fourth week. In the two last cases the men get what would be called in England a *sub.* of twenty francs each between pay-days. I was told that their shops commenced work at six in the morning and kept open until eight at night, with two hours between for meals. The men said they were not actually bound to start at six, or not to leave off before eight, for, as the majority work by the piece, time was not taken into consideration. They stated that they got 7d. per hour when

working by the hour, and that, of course, the more hours they worked the more they received. They do not rest on the Sunday as we do. Sunday is as much a day for work as any other day, but they have a holiday when *fêtes* take place if they like. I examined their work very closely. In an English workshop it would be considered an offence for one journeyman to examine the work of another, but here the offence seemed to be the other way, every one being anxious that I should particularly examine the work that he was engaged upon. The principal wood was, as in the Exhibition, walnut, but there was also mahogany, appletree, and oak. The prices paid to the men were much above what we could get in Liverpool for similar jobs, but they took a much longer time to make them, their activity at the bench bearing but a poor comparison to that seen in our own workshops. Their work was well made; the men have to polish their own work, so that, when they have finished it, it is ready for the showroom. In going through the showrooms I was bound to admire their polishing, it gave to their work such a clean appearance. I cannot say much for the machinery I saw in use, and it was surprising to me how they executed the work with such primitive machines. It could only be by the dexterity of the operatives. In regard to their social condition and manner of living I found that a Frenchman's home was not to be compared to an Englishman's idea of home."

Turning his attention next to the manner in which cabinet-work is disposed of, he found that it passed more directly from the manufacturer to the consumer than is the case in this country.

An Englishman, who had resided for twenty years in Paris, told him that the Parisians thought it quite sufficient to pay the profits of the manufacturers without paying additional profits to middle-men; and it would be better for the public of this and other towns if they would patronise tradesmen who manufacture the work which they sell, and where good work can be got at a fair price, instead of establishments where another business is carried on; where the commonest work is bought in, and sold by salesmen who know no more of the work they sell than the cost price, and the large profit their employers expect them to make when they sell it; where rubbish is got for their money, and a jobbing cabinetmaker is often employed on the premises to keep it in repair. In Paris there is not an establishment of this kind, as far as he could ascertain.

The writer of the short notice of engineering pattern-makers (H. Thomas) describes a school there is in Paris for teaching the theory and practice of mechanical engineering. It was established by the Commune, and continued by the Thiers Government. It has about 150 pupils, the sons of respectable working-class parents. The boys are admitted at the minimum age of thirteen to the maximum age of sixteen, and have to remain three years in the establishment. In the first year they work five hours per day, and spend three at school; the second year six hours' work, and two for education; and the last year seven hours' work and one for study. The municipality of Paris give an annual grant to the school of 60,000 francs. Hitherto no work has been done for private orders, but now the authorities of the establishment contemplate doing it, for it is estimated that it will bring the establishment 12,000 francs. The first year a lad must work for two months at each branch of the business; for instance, a boy will be a striker for two months and then a blacksmith, but in the beginning of the second year he must take up with his special branch. At the expiration of the three years the lads go out as improvers, at wages of 3 or 4 francs per day, and there is no difficulty for them to find employment. The admission to the school is by competitive examinations in elementary education, with particular attention to freehand drawing. All the tools and a good deal of the machinery used are made in the school, and what is not required in the establishment is given away to communal schools formed on the same principle. Boys for diligence and good workmanship are promoted from class to class, and on leaving receive prizes in tools. There are six practical teachers and two draughtsmen, and two principals in the workshops. Like most all French workshops, there is ample room for the hands, no crowding of any kind. The reporter thinks that this and similar establishments will in a few years revolutionise the iron industries of France.

THE RAILWAYS OF THE UNITED KINGDOM.

THEIR COST AND MILEAGE.

THE enormous amount invested in the railways of Great Britain and Ireland renders specially interesting at this moment,—when applications to Parliament for the construction of still further lines are about to be made,—the aggregate capital expended on the several lines already made, together with the total mileage of the same, up to the end of the year which will now shortly close. Taking thirty-seven of these lines, which embrace, it may be said, nearly all the prominent railways in the kingdom, the following compilation shows that the capital expended to the end of June last on fifteen of the great leading lines amounted to 535,569,871*l.*, on a total length of 12,300 miles of railway, constructed by the fifteen companies referred to. The capital expended by these several fifteen companies varies from 10,000,000*l.* to upwards of 75,000,000*l.* At the head of the list is the London and North-Western Company, the capital expended being 75,475,800*l.* on the construction of 1,653 miles of railway. Next in order is the Midland Company, the capital expended being 63,913,502*l.*; miles constructed, 1,408. The Great Western follows, with a capital expenditure of 63,703,727*l.* on 2,139 miles, which, with the lines that have recently been absorbed in this company, makes its mileage greater than any other railway in the country, with an average expenditure per mile considerably less than that of the London and North-Western and the Midland Companies. Next in order of expenditure and mileage come the North-Eastern Company; capital expended 55,652,697*l.*, miles constructed 1,446; the Caledonian, capital expended 34,201,297*l.*, miles constructed 720; the Great Eastern, capital expended 32,323,941*l.*, miles constructed 789; the Great Northern, capital expended 31,205,450*l.*, miles constructed 754; the Lancashire and Yorkshire, capital expended 31,188,477*l.*, miles constructed 452; the North British, capital expended 29,888,969*l.*, miles constructed 895; the Manchester, Sheffield, and Lincolnshire, capital expended 23,338,211*l.*, miles constructed 455; the London, Chatham, and Dover, capital expended 22,310,319*l.*, miles constructed 134; the London and South-Western, capital expended 22,191,899*l.*, miles constructed 717; the South-Western, capital expended 20,625,074*l.*, miles constructed 332; the London and Brighton, capital expended 20,025,808*l.*, miles constructed 360; and the Glasgow and South-Western, capital expended 10,000,800*l.*, miles constructed 342. In addition to the foregoing, these several fifteen companies are now expending, up to the close of the year, 6,497,890*l.* for the construction of 780 miles of new railway and other works. The total capital expenditure, therefore, of these companies, up to the end of December, will have amounted to 542,067,761*l.*

On the remaining twenty-two lines the sum of 62,564,783*l.* has been expended for the construction of 2,954 miles of railway, whilst on these last-named lines and extensions a further expenditure of 4,427,186*l.* will have been incurred by the end of the year, bringing up the total aggregate expenditure on these several railways in the United Kingdom, to the close of December, to 609,059,730*l.* for the construction of 16,073 miles of railway. The largest amounts of capital expenditure incurred by the twenty-two companies last referred to are those by the Metropolitan Company, which is 8,630,134*l.* for thirteen miles of railway; the Great Northern Railway Company of Ireland, 5,661,302*l.* for 404 miles of railway; the North Staffordshire, 7,594,233*l.* for 201 miles; the Metropolitan District, 5,844,444*l.* for 8¼ miles; the Furness Railway, 5,358,566*l.* for 122 miles; the Midland Great Western of Ireland, 4,786,882*l.* for 425 miles; the North London, 3,895,866*l.* for 17 miles; the Great North of Scotland, 3,623,562*l.* for 268 miles; the Dublin, Wicklow, and Wexford, 2,265,933*l.* for 135 miles; the Taff Vale, 2,237,000*l.* for 83 miles; the Brecon and Merthyr, for 1,983,320*l.* for 61 miles; the Waterford and Limerick, 1,967,092*l.* for 192 miles; the Cornwall Railway, 1,833,060*l.* for 65 miles; the Belfast and Northern Counties, 1,593,832*l.* for 150 miles; and the Rhymney, 1,339,300*l.* for 50 miles.

The most costly of all the railways were those wholly within the metropolitan area, the Metropolitan District line, which in this respect stands at the head of the list, having cost 735,000*l.* per mile; the Metropolitan, 660,000*l.*; and the North London, 244,000*l.* per mile. The average cost per mile of the London, Chatham, and Dover line was 170,000*l.*, but it is generally understood that that portion of the company's system between Ludgate-hill and Victoria, and known as the Metropolitan Extension Railway, cost on an average upwards of 500,000*l.* per mile. The average cost of the South-Eastern line was 69,000*l.*, but the Charing-cross and Cannon-street Extension involved an outlay equal to that for the Metropolitan Extension. The Midland cost 45,000*l.* per mile; the London and North-Western, 50,000*l.* per mile; the Great Northern, 41,000*l.* per mile; the Great Eastern, 41,000*l.*; the Great Western, 30,000*l.*; and the South-Western, 25,000*l.* per mile. The cost of the East London line, which for its short length was very heavy, is not included in the foregoing returns, but with this exception the above figures represent, in the main, the cost up to the present time of the railways of the United Kingdom.

DRAINAGE OPERATIONS IN ITALY.

PROFESSOR FLEEMING JENKIN, in his inaugural address to the members of the Engineering Class in connexion with Edinburgh University, gave an interesting account of the great project for draining Lake Fucino in Italy, which, commenced 2,000 years ago, had at last been successfully accomplished. The lake was situated in the Abruzzi province, 53 miles east of Rome, and covered the greater part of a large tableland near the small town of Avezzano. The surface of the water was 2,094 ft. above the sea, but to the lake there was no natural outlet; and though the action of the wind on the water prevented it from stagnating, the neighbourhood of the lake was very unhealthy. Whenever there was a succession of years in which the rainfall was heavy, the lake rose enormously, and covered the adjoining country. The nearest river was the Liris, 3½ miles away, but the mountain Salviano and a high plain separated the two. The comparisons between what the lake was recently and what it had been in ancient times were extremely curious, as showing the changes which took place in the rainfall over a long cycle of years. Between 1783 and 1816 the lake rose 30 ft. 5 in., and was then 74 ft. deep. From the commencement of 1820 to 1835 it fell to nearly 11 ft. below its level in 1783, being then 31 ft. deep. In 1861 it had risen again 30 ft. The remains of drainage works on the lake showed that its area was about the same in 1816 as it was in the reign of Julius Cæsar or the Emperor Claudius, though there was evidence that it had risen much higher in prehistoric times. The average extent of the lake was 33,050 acres. It was 12·4 miles long and 6·8 miles broad. The Italian engineers calculated that the lake had been silting up at the rate of 12 in. per century,—and that was an interesting geographical fact, as showing the rate at which these large lakes silted,—so that the present bottom was 15 ft. higher than it was in the reign of Emperor Claudius. Julius Cæsar had conceived the utility of draining the lake for the sake of the health of the district, and also with the view of increasing the corn-growing area near Rome, but his death put an end to the scheme. In the reign of Claudius the project was again revived, and the favourite Narcissus was ordered to go on with the necessary works at the public expense. Suetonius stated that for eleven years 30,000 men were employed there, and the Elder Pliny said that the works were so extraordinary that no language could give any idea of them. These works consisted in boring a tunnel under Mount Salviano, 984 ft. below its summit, and under the Palentine fields at an average depth of 328 ft., to discharge into the river Liris the surplus water of the lake. The construction of a tunnel of about four miles in length, at a great depth, under a mountain was, in the then state of engineering science, a wonderful undertaking. It would not be an easy job now. The tunnel actually was made, and the lake partially drained; and it appeared from the remains of the old tunnel that the original engineer understood his work extremely well, but that the designs were imperfectly carried out, and the work shockingly scamped by the contractor. First of all, levels could not have been well understood in those days; nevertheless, the outfall had been most correctly chosen, so as to give the reasonable fall to the water of 1½ in 1,000; the new outlet at the river Liris was

within a foot or two, and at the same level as that chosen by the Roman engineer; and the Roman engineer had also selected the direction of the tunnel very properly, and had followed so correctly the configuration of the ground in making it, that the modern engineers had not been able to improve upon it. The old shafts, forty in number, which had been sunk so that headings might be driven in various directions at one and the same time, had been well constructed, and had been largely taken advantage of in constructing the modern tunnel. A great difficulty the Romans must have encountered was the quantity of water which flowed from the strata, and how they got over it was not easy to say, as it was not known that they had pumps sufficient to cope with large accumulations of water. One of the most curious things about the old tunnel was the constant variation of the cross sections. Beginning with a finely-arched entrance, the tunnel, as it went into the hill, got smaller and smaller, just as the men got tired of the work, until in the centre there was only a hole large enough for a man to creep through. Then it opened out again towards the outfall. Where it could be inspected it was all right, but what was altogether out of sight had been scamped in the way indicated. During the progress of the work a great slip had occurred; and evidently as they could not get through the loose earth, the workmen turned off to the right and made a curved gallery through the stone some 400 ft. in length round the obstructing mass. The tunnel was opened by Claudius, who first of all witnessed a sanguinary sham sea-fight on the lake, in which the convicts gathered from all parts of Italy were made to destroy each other. The tunnel, however, soon got blocked, and it was not until Hadrian's time that it was put right. The lake was then reduced to some 17,000 acres. The entrance to the tunnel seemed to have been kept in good order down to the fifth century, but with the fall of the Roman Empire the tunnel was abandoned and the lake resumed its ancient extent. Various abortive attempts were afterwards mede to open the tunnel from time to time. In 1851 a company, with a capital of 200,000*l.*, was formed for draining the lake, the concession they were to get in return being land which was reclaimed; but this enterprise, too, fell through. Prince Alexander Zorlonia, who held half the shares in the concern, however, bought up the other half, and having obtained the repeal of some objectionable clauses in the concession proceeded with the work. He consulted a French engineer, Frantz Mayu de Monsucher, under whose direction a tunnel following the line of the old one, for carrying off 11,000 gallons of water per minute from the lake, was completed in June 1875. The cost had been 1¾ million sterling. The lake had now been completely drained, Zorlonia had got an estate of 35,000 acres, the neighbourhood was now healthy, and the general prosperity which had been brought about to the population by this great work had been most marked.

ROYAL ACADEMY.—LECTURES ON ARCHITECTURE.

Professor Edward M. Barry, R.A., will deliver a course of six lectures at Burlington House early in the New Year. The lectures are primarily addressed to the students of the Royal Academy, but we may mention that other persons will be admitted by ticket as far as space may permit. Application for tickets should be addressed to the Professor of Architecture, at the Royal Academy, or 21, Abingdon-street.

The following is the synopsis of the course:—

January 30th.—"Recent Artistic Losses; The Gothic Revival and Sir Gilbert Scott."
February 6th.—"Italian Gothic the Precursor of the Renaissance."
February 13th.—"Italian Gothic in Secular Architecture."
February 20th.—"Early Renaissance: Brunelleschi."
February 27th.—"Second Period of the Renaissance: Bramante and Sansovini.
March 6th.—"Third Period of the Renaissance: Palladio and Vignola.

Duffield Cemetery Competition. — The Board have selected the design sent under the motto "Veritas," by Mr. Ernest Long, architect, Dudley, for the first premium; and that by Messrs. Gilbert & Stevenson, of Nottingham, for the second premium, subject to the condition of tenders being obtained for the specified amounts. There were sixty-six competitors.

"BLACKBALLING" AT THE ARCHITECTURAL ASSOCIATION.

A special business meeting of this Association was held on the 13th inst., to consider the subject of the election of members, with special reference to the late ballot (mentioned in the *Builder*, pp. 1258, 1309, 1313, *ante*). The meeting was well attended. Mr. H. L. Florence, president, occupied the chair.

Mr. J. D. Mathews proposed, in accordance with notice given, to alter Rule 11 by omitting the words,—"No one whose nomination has been voted upon and negatived shall be again nominated during the same session." He took occasion to state his views as to the qualifications for membership,—views which, he said, had prevailed in the Association for many years. Rule 6 provided that members should be engaged professionally in the study or practice of architecture, and the nomination paper made it clear that a candidate for election must be either an architect, architectural pupil, assistant, or architectural surveyor. Every one who belonged to either of the specified classes, and could get two members to propose him, was morally entitled to election. The Association was not a close club, but an open society of students. It was not possible for the Association to control the entry of young men into the profession, although perhaps some of the members might be disposed to think that some advice would be useful to those who contemplated following the profession. But that was not the point. When a man *had* entered the profession, it was to the interest of everybody to make the best of him,—to encourage him to work hard by the stimulus of emulation and association with fellow students; and to help him by such teaching as men some years older than himself, who had shown special capacity, could most usefully afford. This had been the theory of the Association hitherto, and he thought should continue to be so; and with a view of securing a fresh chance of election for the young men who had, to his intense regret, been injured by their rejection on the 22nd of November, he proposed the alteration of the rules. The names of those of the rejected candidates who put themselves in nomination again, should be submitted to the general body at the earliest possible date. He thought it satisfactory that the committee should have taken the initiative in the matter by calling the meeting.

Mr. Blashill supported the proposed alteration,—stating that some years since the ballot was always used, but occasioned so much delay in the meetings, and was considered to serve so little useful purpose, that the rules were altered, and all elections,—except when the ballot was demanded,—had since been by show of hands. He approved of this, but could not approve of any capricious or careless use of the power of rejection. He was convinced that the nomination papers of several of the rejected candidates ought to have secured their election. More than that, Mr. Mathews's view of the moral right of duly-qualified persons to election had his hearty concurrence.

Mr. Ridge brought forward the amendment to Rule 11, of which he had given notice, which would make the clause as to re-nominations read thus,—"No one whose nomination has been voted upon and negatived shall be again nominated during the same session, *without the special sanction of the committee.*"

This alteration having been supported by Messrs. Clarkson, Sulman, Pownall, Edis, and other members,

Mr. Mathews said that, as the sense of the meeting was evidently rather in favour of Mr. Ridge's proposal, he should be glad to obtain leave to withdraw the amendment which would strike out the clause, and to support, instead, the plan of giving to the committee a power of considering any cases of rejection, and affording the whole body of members an opportunity of setting right any decision come to apparently in error, or without proper deliberation.

Mr. Ridge's proposition was then put, and carried with very few dissentients.

The proposed addition to Rule 10 was then considered, the words to be added being,—"In each case in which a ballot is demanded, notice shall be forwarded in writing to the proposer and seconder by the hon. secretaries at least three days before the election. If necessary, the election to be postponed until such notice shall have been given."

Mr. W. Scott, who, it will be remembered, demanded the ballot on the 22nd of November, spoke at some length, his views apparently meeting with a large amount of approval from the meeting. He proposed that the addition to Rule 10 should not be made, but that the whole question of the election of members should be carefully reconsidered. He formally proposed a reference of the whole subject to the committee from the meeting. The result of the ballot on the 22nd in several instances had, he remarked, been observed with extreme annoyance by himself and the other members who had supported him in his demand for the ballot on that occasion. He could not consider, however, that they were to blame because a bad use,—as well as probably a good use,—had been made of one of the rules. He was quite prepared to take his share of responsibility. The ballot, he thought, should be used at times, and should not be looked upon with such surprise as to frighten members from demanding it on occasions when they felt that it was really called for. The rules provided for the ballot, when required; and left it in the discretion of members to demand it when they thought it necessary:—yet it had been so long since there had been a ballot, that, if he had not been supported by the assurance of many members that he would be doing good service to the Association and the profession, he should not have faced the disagreeable task. He did not advocate a close society, nor wish that membership of the Association should be regarded as a title of honour. It should remain a students' society,—a society for the hard-working students of the architectural profession. But the members should be *bonâ fide* members of the profession, who intended to practise it, or at any rate to seriously study it; and he confessed that he thought it desirable to keep out all others by every possible means. The architectural profession might be said at the present time to be, in a special sense, on its trial before the country. One of the bitter things that architects had to swallow was, that there was no law,—no custom, even,—which could prevent any one, however ignorant, assuming the name of architect, and claiming, from all who were not in the secret, work and confidence, to the injury of every one, especially of properly-qualified architects, actuated in all their relations by principles of honour. The Association, unfortunately, might be turned to evil uses; and, being the only educating body in the profession, might really, at great cost of pains and exertion to its working members, aid in acquiring a smattering of professional knowledge men who would use all the knowledge they acquired to the prejudice of the profession. That was so true that he felt it ought to be said, and ought to lead to effective action, and that at once. Mere numerical strength should be looked upon with no very special satisfaction; what was more to be desired was the right kind of members, prepared to derive advantage from the Association, and, in so doing, to do good to their fellow-members. It would, of course, be impossible for him to point out publicly instances of members who ought not to have been elected; probably, however, most members present could remember only too many cases in point. However, let the past go; but for the future let the privilege of nomination be exercised with due care and sense of responsibility: let the qualifications of candidates be strictly scrutinised, let the ballot be demanded when members thought it necessary. The whole Association should be a vigilance committee to keep out men who did not promise to be good members of the body or of the profession, and to secure the co-operation of all those who belonged to the profession, and were anxious to join the Association. The feeling which he was then expressing was not his own simply. He had taken no step without the fullest consultation with a very large number of his fellow-members; and he was their mouthpiece, because he felt that the Association was being injured in the estimation of its own members and of others so long as that feeling was unexpressed, and the question of the desirability of change, or of the maintenance of previous custom, not thoroughly thrashed out. He concluded by urging the reference to the committee, as the surest way of attaining well-considered action, or an intelligent acquiescence in the old rules, enforced, perhaps, in a new spirit.

Mr. Blashill and others supported Mr. Scott's motion,—only regretting that he had not taken an earlier opportunity of bringing the matter

forward. Any discontent with the rules ought to be considered at once. Mr. Blashill expressed regret that the ballot should have been demanded apparently for the purpose of calling attention to the general question of elections,—not that he considered Mr. Scott was to blame for all that had occurred.

Mr. S. F. Clarkson observed that he thought it would be desirable to pass the amendment of Rule 10 as proposed,—so as to give gentlemen who were to be balloted for every fair opportunity. That expedient might serve only a temporary purpose, but it would make the rules better for the time being,—the interim might not be very short after all,—as considerable questions might arise when elections came to be legislated about; and such questions would probably take a long time to settle.

This suggestion was not pressed, as the meeting wished to allow the amendment of the rule to be withdrawn. Mr. Scott's motion was then put, and carried without any dissentient.

FLOATING BATHS FOR THE CLYDE.

A SCHEME for providing a floating-bath on the Clyde, off Greenock, has been taken up by a limited company, who are about to carry out the plans prepared by Mr. James McCann, shipowner, Greenock. A model of the proposed bath has been made and exhibited in the Watt Museum, Greenock, and has met with approval. The Town Council have for some years past been considering the question of providing baths for the public, and a committee lately visited other large towns for the purpose of getting information. The great cost of a suitable site has been a serious obstacle, and no definite conclusion had been arrived at, but at a recent meeting Provost Lyle expressed himself in favour of the floating baths as projected by Mr. McCann, and the company is therefore likely to have the countenance of the Corporation in carrying out the scheme. The structure will be anchored off the Esplanade, Greenock, its length being 120 ft. and its breadth 45 ft. It mainly consists of two long pontoons, or tanks, of iron, divided into water-tight compartments, which are united by girders stretching across the top in an arch forming the roof, and also across the bottom. The pontoons are about 6 ft. wide, and bear the whole weight of the structure, and the water flows in from the ends, through apertures that will ensure the water being clean, and also through the bottom, which will give a constant current. The pontoons are about 6 ft. wide, and sustain the whole structure. The depth of water in the bath at one end will be 3 ft., for boys, sloping down to 8 ft. at the other, for men. The portion allotted to ladies will be 5 ft. deep. All round the bath fifty dressing-rooms are to be built on the pontoons, and in the space at the end, or stern, a cooking-range and stove will be erected. Externally, the structure will have an agreeable appearance, and the form has been designed with the view of offering the least possible resistance to wind and waves. The cost will be nearly 2,000*l*. It is believed that, should this bath turn out a success in Greenock, others of a like description will be erected at numerous watering-places on the Clyde where the beach is very indifferent for bathers.

INSTITUTION OF CIVIL ENGINEERS.

HEATING AND VENTILATION, GLASGOW UNIVERSITY; RAILWAY WORK IN JAPAN.

AT the meeting on Tuesday, the 3rd of December, a paper was read on "The Heating and Ventilating Apparatus of the Glasgow University," by Mr. Wilson W. Phipson, C.E.

In 1864, when the new University was resolved upon, a sub-committee—including, among others, Sir W. Thomson, Dr. Allen Thomson, Professor H. Blackburn, and Dr. Rankine,—considered the general principles which should form the basis of the operation, to secure the most efficient system of ventilation and warming. The apparatus described was based on their suggestions. The velocity at which the air would travel at different parts of an apparatus was of great importance, as it fixed the area of the inlets and outlets of the air passages. An increased area of the inlet over the outlet of the space to be ventilated was advisable, and the distribution of air into such spaces should be at a mid level, combined with an upward and downward extraction of the air. In determining the form of the air passages, the resistance to the air in motion should be considered; in no case would it be advisable to have sharp angles or sudden contraction in such passages. The form of fan was selected on account of the good results obtained in previous buildings in which it had been used, and because it was not of a complicated construction. The volume of air evacuated by an extraction shaft depended on its area, and on the difference between the internal and external temperature that could be maintained in the shaft, which difference should not be less than from 30° to 40° Fahrenheit. Practice proved that an allowance of 5 to 12 square feet of heating surface, at a temperature of 160° Fahrenheit, was necessary for every 1,000 cubic feet of space to be warmed, and that the best form of boiler for an extended apparatus was the Cornish type. The apparatus consisted of a fan 7 ft. 6 in. in diameter, having four blades set at an angle of about 60°, fixed on a spindle parallel to the axis of the air-channel, and driven by a direct-acting 8-h.p. steam-engine. It drew its supply of air from a height of 100 ft. above the level of the ground, and forced the air through a series of passages into five distinct chambers. In these chambers the fresh air was warmed, previously to its distribution, by being passed over the surface of 4-in. hot-water pipes, arranged in coils, each chamber having its distinct hot-water boiler. The air then left the chambers and passed to a secondary series of passages in direct communication with the rooms, through vertical shafts formed in the thickness of the walls. The air, after its circulation over the different spaces, was carried away by a third series of shafts formed in the roofs, in communication with the main extractor, situated at the east, south-east, and south-west angles of the building. The heating surface distributed over the building was about 20,760 square feet. The cubic space to be warmed, including the amount of air necessary for ventilation supplied by the fan, was about 3,800,000 cubic feet, and the average consumption of fuel daily was 2 tons 3 cwt. for a difference of 125° Fahrenheit between the temperature of the pipes and the spaces to be warmed. The volume of air supplied per hour to the building was 1,800,000 cubic feet. The cost of the annual maintenance of the apparatus was about 500*l*.

At the meeting on the 10th of December, Mr. Bateman, president, in the chair, a paper was read on "Railway Work in Japan," by Mr. W. Furniss Potter, C.E. The author stated that there were at present 66½ miles of railways in Japan, 142¾ miles laid out, with working plans, sections, and estimates, completed, and 455 miles projected, the general route only having been examined and decided upon. The earthworks of the existing lines had been made for a double way, and the bridges for a single way. The superstructure of the smaller bridges was originally of timber, but had been renewed with iron. The larger bridges were all of the Warren girder type, and as a rule of 100 ft. spans. The foundations were on brick wells 12 ft. diameter, and on an average about 60 ft. deep. Native examples of engineering were chiefly remarkable for their temporary character. The wages of first-class carpenters were 1s. 8d. per day; of blacksmiths, 1s. 6d.; of bricklayers and masons, 1s. 5d.; and of coolies, 11d. Materials found in the country for construction were not very good, except timber, which was abundant. No limestone possessing hydraulic properties had been found. It was impossible to furnish any reliable information as to the cost of the works. The chief engineering difficulty in Japan was the treatment of the watershed. The beds of the rivers were nearly all higher than the surrounding country, varying from a few feet to 40 ft., or more. In some instances the railway had been taken under the rivers by tunnelling, and an example of this was given. As a rule, however, the rivers were bridged over, and approached by steep gradients and high embankments. The traffic on the railways already constructed was considerable, and it was estimated that on future railways the passenger traffic alone would pay a dividend of seven per cent. Not much had been done in goods traffic, as the existing lines were in competition with the water communications.

At the annual meeting on the 17th, the council and officers for the ensuing year were elected. A correspondent writes,—"There is a strong feeling among the members that the 'house list,' as issued by the council, is composed partially of Government and other contractors, whose places ought to be occupied by independent civil engineers. What would be said if the council of the Royal Institute of British Architects proposed that the new council should consist partly of contractors and builders, although they might happen to have 'handles' to their names? It is clear the members of council ought to be, like Cæsar's wife, above all suspicion."

TECHNICAL SCHOOLS AND COLLEGES FOR BUILDERS IN PRUSSIA.

THE first technical school for builders founded in Prussia was opened about twenty-five years ago at Nienburg-on-the-Weser, in the then kingdom, now the Prussian province, of Hanover. It early became a Government establishment, and for a long time remained the only institution of the kind, but within the last ten years a number of similar schools have been founded, generally by private persons. These institutions have, however, generally passed into the hands of local authorities, and now the central government has given notice wherever such schools exist that it is prepared on certain conditions to make annual grants for their support. The conditions are that the State shall have the right of co-operating in the general organisation of the institutions, in laying out the course of instruction, in the appointment of the teachers, and in the holding of examinations. These institutions are quite distinct from the ordinary trade schools which have been in operation in Prussia for a long period. For the latter a comparatively high entrance examination has to be passed, and a regular three years' course of instruction, including the higher branches of theory and practice of the chief trades and some of the professions, is given to all students attending them. The new technical school for persons entering the building trades, on the other hand, only require in the pupils as much education as is imparted in the common elementary schools, together with some experience in actual building work. The course extends over a year and a half to two years, and the time devoted to the classes, which include drawing, planning, mensuration, taking out quantities, estimates, practical demonstrations in work, the knowledge of all processes, instruments and materials used in the trade, occupies no less than forty-eight hours a week, or eight hours a day. The western provinces of Germany are already tolerably well supplied with this class of schools, the chief being those at Holzminden and the fine *Bauschule* at Hamburg. In the eastern provinces, on the other hand, there is such a dearth that Prussian subjects have been compelled to avail themselves of the building schools of Saxony, and it is accordingly intended to establish a number of new institutions in suitable centres in that portion of the country. In addition to this reorganisation of the building schools, the Government is creating new technical schools for other special trades in several of the chief seats of manufactures. Thus in Crefeld, a great centre of the cotton and silk manufactures, the old School of Weaving, which has fallen into neglect, is to be remodelled under the combined auspices of the Government, the Town Council, and the Chamber of Commerce, and is to be turned into a school of textile industry, worthy of the present times. At Iserlohn, again, which is one of the chief centres of the cutlery and metallic industry, the old provincial trade school is to be entirely reorganised, and turned into a great technical college for all branches of metallic industry.

All this is only part of a grand scheme of reorganisation of the various classes of technical schools in Prussia. Thus the Bauakademie, or central Building College of Berlin, is to be united with the *Gewerbe Akademie*, or central Trade College of that city, so as to form one great central Technical College, which is to be placed under the laws peculiar to universities in Germany. All the other trade schools (*Gewerbe Schulen*) of the kingdom are to be divided into two groups. Another innovation which it is proposed to introduce without delay is the establishment of technical workshops and laboratories in connexion with all the middle and lower trade schools, in which certain improvements suggested by a recent inspection of similar institutions in France, Austria, and South Germany, are to be embodied. It may be also noted that on the State railways workshops are to be erected specially for the teaching and training of young men in all branches of the technical and scientific, as well as the practical, work of railway engineering.

OUR IRON: ITS SOURCE AND USES.

Few of our industries have a more romantic history than that of the iron manufacture, which waxes and wanes in countries and districts according to the abundance or scarcity of ore or fuel, the distance of the raw materials and other allied circumstances; and which, having its early home in the south of England, has gradually forsaken that and found a dwelling in Welsh valleys, in the west of Scotland, and in the north of England. But its location is not yet fixed, for changes are still in progress, and the alteration in the form of demand is causing further fluctuations in some of the ancestral seats of the iron trade in Britain. In the early use of iron, the quantity consumed was so small that the richer ores were found in abundance to satisfy the demand, and the use of the purest and best form of fuel was practicable; but as the demand increased, and as the supply of wood became less, very considerable importations were made before the use of coal-smelted iron became general. As it did so, however, there was a partial change in the locality from which our increasing supplies of iron were drawn. The utilisation of the vast stores of minerals in Staffordshire, and of the even larger supplies of South Wales, caused very great accessions to the total of the production of the country, and enabled the increasing demand to be met with even a reduction in the prices. Again, the discovery of the "black band" in Scotland and that of the hot-blast built up the great trade of the Scotch iron manufacture; whilst later the old industry of Furness was greatly enlarged, and the use of the vast stores of ironstone in Cleveland converted that isolated locality into one of the greatest of our mineral centres. Thus there has been a continual growth in the output of iron, by leaps and bounds with periods of depression interspersed, and there has been also a continual movement in the centre of production,—the tendency being, on the whole, however, unmistakably northwards. Remembering how vitally important that industry has become in the building up of our commercial greatness, it cannot be uninteresting to trace out the districts from which we draw our present supplies of iron, and to observe the proportions of their contributions.

Probably the best test will be that of the locality of our pig-iron manufacture. It is true that there is an importation of ironstone into some of our iron-smelting districts, and that there is also a considerable use of iron in them brought from other districts, but that importation and use is small in comparison with the total, and there are counter-balancing circumstances. We have an output of iron ores in the United Kingdom of over 16,600,000 tons, and the importations of iron ore vary from half a million to rather more than a million tons yearly. From these ores our production of pig-iron varies from six to six and a half million tons yearly,—over 15,000,000 tons of coal being used in the manufacture. The smelting-plant in the kingdom is close upon a thousand blast-furnaces, but a considerable number thereout, in the older districts especially, are antiquated and obsolete, —the smallness of their production and dimensions rendering their use undesirable on account of the additional expense the smelting of ores in them is necessarily charged with. In late years, our production of iron has generally been from less than two-thirds of that number, and in the latest year for which we have official records of the output, the total number of furnaces in work did not exceed 541. The localities of the works may be, then, fairly taken as the best test of the centres of iron production in the kingdom, whilst the extent of that production may be assumed to be pretty fully indicated by the contribution of the several districts to the total output. Of the 541 blast-furnaces, none are in Ireland; sixty-three are in Wales; 109 in Scotland; and the remainder are in England. These numbers are necessarily fluctuating ones; but they represented the actual numbers stated to be in blast at the end of last year; and, allowing for local and exceptional circumstances, they indicate with tolerable accuracy the sources of our supply of crude iron. England, it may be said, produced last year about 4,888,991 tons of iron; Wales, 737,673 tons; and Scotland, 982,000 tons, — the total being thus 6,608,664 tons for the kingdom. Coming now a little to the details, the output of England may be divided into that formed by sixteen districts, having about 143 sets of active iron-works, in numbers for each district varying from one to seventy-five. As, however, these blast-furnaces were of very varied dimensions and output, varying from one or two of the old charcoal furnaces yet in operation in the north-west to the massive and costly erections of late years which have raised the dimensions from those general a few years ago,—of about 45-ft. high furnaces,—to such as those at Ferry Hill, above 100 ft. high, with corresponding enlargement of their other dimensions, — the mere number of furnaces is not a criterion of the output, and the actual production for the last year may be better given in detail for each of these districts. Commencing, then, with the north-east, which depends upon the supplies of Cleveland for its iron, and the adjoining coalfield of Durham for its fuel, we find that Northumberland and Durham, from forty-one blast-furnaces, produced 734,438 tons of pig-iron, and the North Riding of Yorkshire, from seventy-five blast-furnaces, produced 1,374,582 tons, the total production of over 2,100,000 tons giving what is technically called the Cleveland district the position of head of our iron-producing centres, inasmuch as it contributes nearly a third of the total output of the kingdom. Another comparatively young district, that of Furness, occupies the next place, Lancashire making from its thirty-three blast-furnaces in operation 624,189 tons. Adjoining this, the district of West Cumberland makes, also of rich hematite iron, at its twenty-six blast-furnaces, 538,156 tons. The old district of South Staffordshire has only a very small number of its 150 blast-furnaces at work, but out of its fifty-seven in operation it produced 428,276 tons of its well-known iron; and the adjoining district of North Staffordshire added from twenty-five blast-furnaces about 255,383 tons. The Derbyshire district had from thirty-seven blast-furnaces in use a production of 328,203 tons. The West Riding of Yorkshire has an ancient reputation for its iron, and it produced from its thirty furnaces 229,027 tons. Lincolnshire,—one of the newest of our districts,—had ten of its furnaces in operation, yielding 116,857 tons; and Northamptonshire, from thirteen furnaces, produced 106,948 tons; whilst the older and long-renowned county of Shropshire, out of its fourteen furnaces in blast, only produced 102,180 tons. Gloucestershire had four operative furnaces, and an output of 25,602 tons; whilst Wiltshire, Hampshire, and Somersetshire, from three furnaces, had a total output of 25,150 tons.

Passing on to Wales. In North Wales,—Denbighshire produced 26,715 tons, the only contribution from that part of the principality. South Wales had sixty furnaces at work, the production being 710,000 tons, almost equally divided between Glamorganshire and Monmouthshire. In Scotland there are blast furnaces erected in six counties, and 109 were at work last year. Lanarkshire takes the lead, having produced last year 620,474 tons out of seventy-three blast-furnaces. Ayrshire follows with 306,285 tons from twenty-nine blast-furnaces, and the output of the rest is insignificant,—the total of the four counties being seven operative furnaces and a production of 55,241 tons. There has been since the period to which these figures bring us down, some fluctuation in the details, generally in the direction of lessened output; but the proportionate production is not so much modified by this circumstance as by that of the change which is taking place in the nature of the demand for iron. Only a few years ago nearly all our iron for steel-making purposes was imported into the kingdom, and the great uses of our pig-iron were for the foundries and for malleable iron works. But since the discovery of the Bessemer and Siemens processes for the manufacture of cheap steel, a very great demand has grown up for pig-iron capable of conversion by these processes into steel, and now almost entirely from our own pig-iron a million tons of steel are annually manufactured in the United Kingdom, whilst there has been a decided diminution in the consumption of malleable iron,—a diminution still in progress. At the same time, the growing cheapness of our crude iron is stimulating its use for foundry purposes, and there is an ever-expanding area for its consumption in this respect. The feature least satisfactory about the prospect of the trade is that our supplies of ironstone, the pig-iron from which is capable of conversion under present circumstances of the manufacture into steel, are very limited, and confined, so far as extensive deposits are concerned, to one locality, but attempts to utilise the more abundantly-dispersed, if poorer ores, are being made, and with some prospects of success. Were these attempts successful, it is in every way probable that there would be a very great expansion in the demand for iron, for steel would be capable of unlimited supply even cheaper than at its present low rates. Meantime, there is an unquestionable check to the production of iron, or rather, to the increase of our output, but it is one due to many causes, and it is accompanied with very great economy in the production attained by an enlargement of the average output of our blast furnaces, and by a reduction of the expenditure in the cost of smelting. We have in our Cleveland and other iron fields unlimited supplies of iron, and if means can be found to convert these into steel cheaply and expeditiously, a greater future may be predicted for our metallurgical industries even than their famous past.

KENDAL.

In a country like that which the pilgrims called "pleasant and mountainous," in the far north-west, Kendal stands, one of the ancient seats of industry in the region where bold hills and fertile valleys are interspersed with long bleak moors between Lancaster and Carlisle. The place of the town in history is no unimportant one; its industries have long been both varied and great; and it has played its part in the development of the resources of a county not greatly benefitted by art till recent days. It was near the course of an old Roman road, its castle, ruined and grim, is said to stand on the site of an old Roman station; and it is associated with the memories of the Parrs and others of the visitors to Kendal. Three centuries have passed since the incorporation of the town; a much more limited period has passed since the opening out of the canal gave its trade a stimulus; and it is not half a century since the legislature invested it with the privilege of direct Parliamentary representation. In the widening valley of the Kent, surrounded with green and often well-wooded hills, and backed by its long dells, it occupies no second situation amongst the comparatively few populous places of Westmoreland. It has not known the progress which some towns have in recent years, but it has, in some degree, fulfilled the promise of its past.

Forty years ago Kendal was one of the chief towns in the north-west. Its population was not much inferior to that of Carlisle, and it had a variety of trade not possessed by the merry old Border City. Its population had risen from 8,984 in 1821, to 10,015 in 1831, whilst neighbouring townships had benefited much by the aggregation of trade there. Its corporation had larger powers than they now have, and it had the journalistic enterprise which it has so long shown. Its manufactures embraced the "making of waistcoating in all its branches" in addition to kerseymeres and linsey woolsey, it made serges, baizes, carpetings, and knit woollen caps and jackets, combed and spun wool, worked marble, dyed and tanned, and in other modes contributed to the producing power of the county. There were then three bobbin-turning firms in the town; three dyers; "Atkinson & Whitwell" were manufacturing carpets; six manufacturers of fancy waistcoatings were enumerated, as well as four of webbing, fourteen of hosiery, four of linen and checks, ten of linseys, and twelve of woollens. Coal and slate merchants were located at Aynam Wharf; tanners and skinners in Highgate and Stramongate; whilst sacking-makers and others gave some little variety to the trades of the town. The gasworks were then in Park-lands, with "Isaac Wilson, secretary," eight coaches passed through the town with carriers many, whilst the Water-witch Packet bore passengers to Preston and Lancaster by canal daily. There were two churches, one "so old that men know not by whom it was built," and ten chapels; whilst the public buildings included a theatre, news and assembly rooms, an institute and savings-banks, schools, and an Oddfellows' hall. Round about the town, in the valley of the Kent, there were paper and textile industries; the green hills were dotted with the light walls of little villa residences, in which the aristocracy of the district dwelt, and Kendal presented the appearance of a prosperous town, in which trade met spade to mutual advantage.

The years that have flown have not very

materially affected the appearance of Kendal: it still preserves its agricultural supremacy, and it still manufactures its woollens, carpets, and rope, as well as other similar goods, on perhaps a smaller scale. Its population has not very largely swollen: it was at the last census 13,446; but there are not the elements of the rapid growth some towns know,—it has neither coal nor iron, those great producing powers of large populations, neither is it a vast maritime or railway centre. The casual visitor to Kendal sees proof that it is still a centre for the woollen and carpet trades; the bobbin-turners are still located in the district, utilising the water power. Its wool sales are noted far and near; in hosiery it has no mean fame, fishhooks and rope in comparatively limited quantities are made, and its proximity to quarries gives it some advantage in the building trades. Its markets retain much of their former fame in an age unfavourable to the general retention of this mode of sale; for it is still the centre of a wide agricultural domain, fruitful and fertile, and of this it is the natural mart.

An old and a wealthy town, it has naturally attracted to itself many of the institutions which wealth enables its possessors to supply, and thus it is in advance of many towns in its provision for the social and intellectual as well as the spiritual needs of its people. It has the germ of a good and growing rateable basis, that of the town proper being 41,152*l.*; Kirkland, 1,849*l.*; and Nethergraveship, 4,106*l.*, the rates levied by its urban sanitary authority are close upon 3,000*l.* in the half-year; and there are decided symptoms of municipal life. Chief amongst its literary associations is its Institute, which for over twoscore years has done something towards spreading literary and scientific knowledge, which has 177 members, an income of about 250*l.*; and issues from 5,000 to 6,000 volumes from its library yearly. There are a workmen's institute and other similar organisations, each in its sphere exerting some beneficial influence. Church and Dissent, in many shades, are represented in the old town by organisation and often stately homes; and Kendal has deserved the credit it has long possessed for its schools; whilst it has had no lack of associations of a social as well as a commercial and patriotic character. There is not the growth in some of these which might fittingly be looked for amongst towns where there is a rapidly-growing population. It is not stationary, but its growth is slow, and there are no circumstances to induce the belief that in this respect there will be a speedy change. Its situation, pleasant as it is, places it off the main track of trade now, and hence it cannot hope for a further rapid development, though it may hope to maintain the fame it has acquired in centuries in which it did good service.

A pleasant sight is Kendal, seen from the main line of railway, its higher houses shining by night and gleaming by day in the woods and on the banks on which they are built; whilst lower down, towards where its river runs its course by factories and tanneries, trade centres in the narrow streets and gates, and the ruins of its castle rising in grim greyness from the green mounds. It is true that the anticipations that might be formed are not fulfilled by the nearer glimpse, for the narrow and sometimes dirty streets hide away many of the handsome and even stately buildings the town has acquired since the days when "James the Third" was proclaimed at the Market-cross, and the Earl of Derwentwater, his devoted adherent, took his ease at his inn in Stricklandgate, whilst Highland clans kept guard and pibrochs sounded. The "days o' 45" have gone, and something has been done to purge Kendal from one of the ills that old towns are so often heir to,—overcrowded streets and their accompaniments; but much yet remains to be done. With a trade varied, and in parts extensive, with devoted and capable citizens, and with a noble situation, giving to it the command of the primal industry, Kendal should in the future flourish even more than in the past. It has not the rich gifts of mineral treasures that many northern towns possess, nor has it the advantages which flow from situation in the way of travel; but it has a capacity for work,—it has cheap power in its flowing stream, which gives it other advantages for the textile trades, and it is in the rut of the pleasure-seeker, whilst it retains in a large degree some of the advantages it acquired in the days when another mode of travel than that now known placed it in the front rank of towns of the North. With wealth added to these advantages, it should be able not only to hold its own, but to improve its commercial position, whilst it devoted some attention to the needed task of improving its own state, and removing some of the things which render its mortality more than it otherwise would be, and contribute to the pauperism and drunkenness it has its share of, in common with most populous places.

PORTLAND CEMENT.

SIR,—Will you allow us to reply to Mr. Faija's letter on the question of Weight *v.* Measure? Mr. Faija apparently does not recognise the fact that Portland cement has been sold by weight, and not by measure, for some years.

In our former letter to you we stated that it it is the custom to call 100 lb. a bushel, and it is only the word "bushel" that we wish to see discarded. We cannot, therefore, see in what way it would be a premium to manufacturers to send out what he pleases to call "heavily-limed and badly-ground cement." If Mr. Faija knows anything whatever about the manufacture of Portland cement, he must know that it is very far from the interest of any manufacturer to make any excessively heavy cement; on the contrary, we would much rather not exceed 112 lb. per bushel.

We still maintain that cement should be sold by weight, as it has hitherto been, and that if this is done without calling 100 lb. a bushel, consumers would know the exact value they were getting for their money.

JOHN C. GOSTLING & Co.

SIR,—Will you allow me, as a plasterer of forty years' experience in the use of cements, to thoroughly indorse Messrs. Gostling & Co.'s opinion that Portland cement should be sold by weight, as I always found the heavy cement the best,—the longest setting and the hardest getting; and also to point to a few of the many jobs where I have been employed, and where I have used heavy Portland cement, viz., the front of the Alexandra Hotel, Hyde Park-corner, in best heavy Nine-elms Portland cement (Francis Bros.), done in the year 1853, and is now as perfect as on the first day; and if Mr. H. Faija will look into the yard of Messrs. Bazley White Bros., of Millbank-street, Westminster, he will see some steps up to their offices, in their heavy special Portland cement, done by me in the year 1864, as the date over the door will testify, and which have stood the wear and tear daily of carmen's hob-nailed boots, and have not a scratch on them, and are as sound as when completed. The cement used weighed 117 lb. to the striked-bushel. And I here give it as my opinion that Portland cement to be good should not weigh less than 115 lb. to the striked-bushel. It is the heavily-limed and coarsely-ground cement that causes so many lamentable failures, and brings a capital material into disrepute and disuse; and to prevent these failures manufacturers should grind it finer, and sift it through a sieve not less than from eighteen holes to twenty holes to the lineal inch, as these large particles of coarsely-ground cement expand, causing fire-cracking and flaking in the fining coat in plastering.

WILLIAM PULHAM.

SIR,—With reference to the suggestion that Portland cement should be sold by weight alone, I quite agree with Mr. H. Faija, who states that, taken alone, weight is no true indication of the quality of cement. In fact, nothing in my opinion can be more misleading. The results of experiments which I have made on the strength of Portland cement in relation to weight prove this most conclusively (*vide* Mins. of Proceedings Inst. C. E., vol. xlvii., p. 127, and vol. liv., sess. 77-78, part iv.). I therefore fully endorse the opinion, that in buying by weight alone the purchaser would certainly not know what quality he was receiving. Neither, on the other hand, would he be any better informed if he were to buy by measure alone. The quality of Portland cement depends, I think, upon three conditions in combination, viz., weight, degree of fineness, and tensile strength, the second of which is almost universally ignored. The only alteration in the present practice necessary as to the sale and purchase is, that the degree of fineness should be distinctly stated, and insisted upon. What is absolutely required is, that consumers should have a clear conception of what they require as regards weight, fineness, tensile strength, &c.; and having drawn up the specification in such a manner that there should be no ambiguity, the manufacturer would have an equally clear conception of what he is asked to supply, and, having undertaken the contract, would understand that the cement would be received only on a strict compliance with the terms of the specification.

I would suggest that the cubic foot should be substituted for the bushel, as being far more convenient as a unit of measure.

C. COLSON.

THE PRACTICAL SCHOOL OF MEDICINE IN PARIS.

THE practical school of the medical faculty in Paris, of which the foundation-stone was laid on the 4th inst., will be an edifice of a very extensive character. It will lie in the *École de Médecine*, opposite the Medical Faculty, and will cover an area of 11,784 square mètres. The cost of its erection is estimated at twelve million francs, or 480,000*l.* At the ceremony of laying the foundation-stone, the Minister of Education stated that the institution would, when completed, contain fifty-two amphitheatres, sixty laboratories, each with eight saloons attached, and twenty-five rooms additional for the library; while the practical medical school, instead of having as hitherto six laboratories, will possess fourteen, together with twenty small ones for the professors, and six consultation or conference chambers. Thus, according to the minister, the University of Paris will be raised above all competition, and the Parisian Medical Faculty will again stand at the head of everything of the kind throughout the world.

DOINGS OF THE ARCHITECTURAL ASSOCIATION.

SIR,—When, now over thirty years ago, the Architectural Association was founded, it was essentially a "*students' society.*" Those who promoted it,—myself among the number,—were nearly all boys, and I think that the kind sympathy and help we received from our seniors, prominently among them dear old Professor Donaldson and yourself, was mainly due to the fact that we were a body of *juniors* anxious to advance ourselves in the profession, and I venture to think that the ultimate success of the Architectural Association was due to this more than anything else; and as we grew older, and one by one left the Association, it was not from want of interest in it, but rather from a feeling that it was our duty to give place to younger men. Now, it appears, if the story of the recent blackballing be true, all is changed, and to be a young man is a disqualification for membership. A case in point, of my own personal knowledge. One of the recently blackballed is a youth, aged nineteen (a pupil of a highly-respectable firm of architects, formerly members of the Association), possessing no conceivable disqualification for election *except his youth*. My own son, whom I have recently articled, is looking forward to join the Association, but I shall certainly think twice before I have him proposed, if youth is to remain a barrier to membership.

C. G.

COSTLESS POWER FOR THE ELECTRIC LIGHT.

SIR,—Referring to the letter of Mr. M. Paterson in the last week's *Builder*, there is no doubt that electric lighting will compare most favourably with other systems where water-power provides an economical motor; and advantage may at last be taken of many sources of power at present neglected. The water companies seldom favour the use of their water as power, and their arrangements and tariffs would need considerable alteration to make them applicable. Many small rivers with a fall and volume inadequate for giving directly the necessary power, might, if applied to the working of small pumps, continuously raising water to an elevated reservoir, accumulate sufficient gravity-force for use during the hours of lighting. The successful combination of water-supply with power-transmission in Zurich and other Swiss towns affords numerous examples for guidance. The transfer of water-supply undertakings to municipal bodies is becoming more and more the custom in England to favour such economical methods.

EWING MATHESON.

SUGGESTIVE FURNITURE.

Sir,—Additional evidence of any fact, however well established, is always interesting to the lover of truth, and with reference to Lady Morgan's chair, I can affirm that in 1843, when that lady sat to me for a sketch in her pleasant little house in Hans-place, I have a distinct recollection of her sitting in the chair which you now own, and by referring to the engraving of the sketch which appeared either in the *Illustrated London News* or Mr. Spottiswoode's *Pictorial Times*, I think it will be found that the two chairs resemble each other.

The lovers of old furniture, and of the many interesting facts that must always surround our household gods, must be exceedingly indebted to you for the suggestive furniture you are good enough to show them; and I, for my part, take so much interest in such matters, that I should like exceedingly to see your series increased by the addition of many more similarly rare pieces that exist in the possession of lovers like yourself of such objects. C. M.

BUILDERS' ACCOUNTS.

Sir,—Will you please allow me space to say a few words respecting the manner in which a great portion of builders' accounts are disposed of? I have been a builders' surveyor a great many years, and spent a great deal of time in settling accounts with architects or their surveyors, and am sorry to say that during the last few years, since the rises in wages, I am continually offered the same old prices as fifteen years ago, and find it very difficult, indeed, to obtain anything like an adequate profit, and very frequently am offered what does not arrive at prime cost, and by men who, I believe, have every wish to deal honourably, and who really are convinced they are dealing very fairly. What is the reason of all this, and what is the remedy for this state of things?

It will be admitted by all that a great increase has, during the last few years, taken place on the cost of work generally. Lessening the number of hours per week increases cost over and above the mere increase in wages, the more pay the less in quantity of work holds good almost universally.

Now, after any rise in wages it will be found hard, tedious work to adapt prices so as to properly come out to fit, and it can only be done by constant application and proving.

As I take it, no one will dispute that all knowledge of prices must emanate from the builder's office, and by dint of hard struggle by degrees it obtains an amount of recognition by the architect or his surveyor. I can only say that every attention should be paid to what are asserted to be fair and proper prices. On the other hand, the builder's surveyor should make it his business to show beyond dispute the prime cost of any matter required. This can only be done by a thorough system of booking.

Do not let me be misunderstood. It cannot be expected that any two surveyors will entirely agree as to fractional prices in the sub-division of items, and unless polite deference is used on either side it will be found very hard and unpleasant work. For a man to assert himself simply for the sake of doing so is the height of absurdity. A Builder's Surveyor.

OUR PAVEMENTS.

Sir,—Permit me to ask on what principle our vestries act in ignoring their duties of *cleansing* the roadways, footways, and pavements of snow. We pay very heavy rates for paving, lighting, and cleansing, and surely this is peculiarly one of these; in fact, we have no legal status on the footways or pavements, but are simply trespassers. This is manifestly and clearly a duty that can only be properly and efficiently carried out by the vestries. I trust we may soon have a magisterial decision on this.

A Surveyor.

Cremation.—Professor Gorini is at the present moment in London employed in superintending the erection of a funeral pyre on a site belonging to the Cremation Society near London. The pyre is on the system which has been approved in numerous cremations at Milan and other places in Italy.—*British Medical Journal.*

"COFFEE TAVERNS."

Sir,—Most of your readers will be glad to see Mr. Horace Field's letter on the subject of coffee taverns in your pages. A great deal has been written and spoken of late on the education and culture of the working man; but in all these well-meant efforts the root of the matter has seldom been touched. The coffee-tavern movement is but a branch, and a very important one, of a much-needed reform in the habits and tastes of the working classes. What those habits and tastes are let any casual passer-by notice for himself. In five cases out of six, I believe, he will tell you that the chief topics of conversation among working-men are beer and wages. Can the working-men be blamed for this?

In London there are about 8,000 or 9,000 public-houses, beautifully situated, as we are all aware, at the corners of the principal streets, and thriving most luxuriantly in those districts most thickly populated and inhabited by the working class. The result of all this is naturally to produce a system of drinking early and late, during work and out of work; in fact, a kind of etiquette to drink, to treat others to drink, and to be treated in return, whether thirsty or not. This system (which extends more or less to other classes) amounts, I believe, to a perfect thraldom, making it most difficult, if not impossible, for a moderate drinker to remain so. He must become an abstainer altogether, and in so doing cuts himself off from many of his friends, which makes his sobriety irksome and far less tempting. This being so, it can be readily understood what a downright good work is the providing of public-houses and clubs, bright and cheerful inside and out, where a man can obtain, at a reasonable rate, *food*, and as much as he likes of other than intoxicating drinks.

But I would go further than this, and urge that architects as a body, travelling as they do to all parts of the country, can do much both by example and by a word of advice or caution, as opportunity offers, to influence working-men on the side of temperance rather than indulgence. It may be said that this is outside the architect's province. Doubtless it is so, according to the bare letter of the "specification and conditions of contract." But even on these grounds, from an art point of view, apart from any higher motive, there is every reason for the profession to encourage, if they cannot take a part in, this movement. Every architect must have felt the pleasure of meeting and consulting with a really intelligent and reliable artisan.

Let the English workman bid a final adieu to drunkenness and the drinking habits which lead to it, and he will emerge, as God has made him, of as good capacity and as good a disposition as any man on earth to work, and take a real interest in his work, for its own sake. He would indeed be an embodiment of the "art-workman" discovered not long ago by the gifted writer of the article in the *Quarterly Review*.

To builders and large employers of labour the benefit of this movement is obvious. Truly, if the time and money could be collected that have been wasted in the last few years by the intemperate portion of the working and other classes, there would be amply sufficient to "excavate and remove" the whole of the Russian and Turkish empires, or to smother Afghanistan with ultimatums and cannon-balls 10 ft. deep. T. E. C. S.

A NEW PILE.

Messrs. Le Grand & Sutcliff's patent tubular pile is very ingenious. The blow is delivered not on the head of the pile, but at the very point. An elongated cylindrical monkey, which passes down inside the tubular pile, is used, and being raised by means of rods or rope is allowed to fall upon the flat head of the solid point, the pile forming its own guide for the monkey.

One advantage of these piles is that they can be driven with facility, of very great length, and in deep water. They can also be filled with concrete, if desired, to increase their strength.

Builders' Benevolent Institution.—The annual ball in aid of the funds of this institution is to be held at Willis's Rooms on Thursday, the 30th of January next. Stewards are being looked for.

CHURCH-BUILDING NEWS.

Yateley.—The parish church of Yateley has been re-opened, after the restoration of the tower and belfry. The work has been carried out by Mr. Bunch, of Yateley, from design by Mr. Foster, of London. An extra bell has been supplied, increasing the peal from five to six, and the work of re-hanging the peal, which has been fitted with new frames and clappers, has been entrusted to Mr. Harmes, of London.

Buckland Newton.—On the 13th ult. the parish church of Buckland Newton was re-opened, after restoration. Eight years ago the unusually large Early English chancel was restored and reseated, and now, under the superintendence of the diocesan architect, Mr. T. H. Wyatt, new lead roofs have been provided for the nave and north aisle, a fresh panelled ceiling to the south aisle, the church paved and re-seated, the unsightly gallery removed, and the tower arch opened, &c. As the work progressed, it was found necessary to rebuild the north arcade, the arches were so dangerously out of the perpendicular. The old oak Elizabethan seat-ends have been preserved in the nave along the centre aisle. Mr. Trask, of Norton-sub-Hamdon, was the builder employed.

Winderton.—On the 10th inst. the new Church of St. Peter and St. Paul, at Winderton, in the parish of Brailes, Warwickshire was opened for worship under episcopal licence. The church is of the Early English style, with arcaded porch, lofty chancel arch, circular apse, and alabaster reredos; and its shingled spire is 90 ft. in height. Variously coloured local and other stone is used in the building, both inside and out. The architect is Mr. William Smith, of London, his clerk of works being Mr. Munt. The builders are Messrs. Atwood & Son, of Brailes.

Brampton.—On the 11th ult. the new parish church of St. Martin, Brampton, was consecrated by the Bishop of Carlisle. The church, which has cost about 6,800*l.*, without including the unfinished tower, which will cost 1,770*l.* more, consists on plan of a parallelogram 108 ft. by 60 ft., divided into nave and aisles, a *quasi*-chancel being formed by dividing off a portion of the east end of the nave by low screen wall of stone. The church will seat 500 persons. The walls and columns are wholly composed of red sandstone from the Gelt quarry. Mr. Webb is the architect. The contractors for the whole work were Messrs. Beaty Brothers, Carlisle. The joiners' work is by Mr. Court, of Carlisle; and the painting, plumbing, and glazing were done by Messrs. Thomson & Sons, Carlisle. The plans were carried out under the superintendence of Mr. Isaac Morland, clerk of the works.

Bungay.—It is proposed to restore St. Mary's Church, Bungay, from plans prepared by Mr. Phipson. The estimated outlay is 3,300*l.*

Wentbridge.—The new church which has been erected at Wentbridge, near Pontefract, at the cost of Mrs. Barton, of Stapylton Park, was consecrated by the Archbishop of York on the 14th ult. It is in the Early English style, and comprises nave, chancel, and transepts. It contains accommodation for 100 persons. The reredos, the work of Mr. Earp, of London, is divided into three panels, the centre one being occupied by a cross, the gift of the mother of the late Mr. Barton. The apse windows were presented by Mrs. Barton's sisters, and the windows in the south side of the nave, containing representations of St. Peter and St. Paul, by Mrs. Ramsden. In the other windows is glass of a diagonal form, the work of Mr. Pepper, of London. The architect was Mr. A. W. Blomfield, of London.

North Lopham.—At a vestry meeting, held on the 7th ult., the plans for the repair and restoration of the parish church, prepared by Mr. H. F. Bacon, architect, of London, were presented and approved, subject to sufficient funds being raised for the purpose.

High Bray.—The parish church of High Bray, North Devon, which has during the last eight months been in course of restoration, from plans by Mr. E. Ashworth, has been re-opened. The chancel walls have been rebuilt, and a good portion of the tower, buttresses, and parapets reconstructed. The windows have been rebuilt in the local stone; the tower has been thrown open to the church; and the west window enlarged to its original design. The ceilings have been divided into compartments by moulded ribs, the nave wall-plates disclosed. New floors have been laid, in Langport stone for

the avenues, and in Minton's tiles for the sacrarium. A Porritt stove has been introduced near the south entrance. The seating is of simple character, of pitch-pine, the altar, prayer-desk, and lectern of oak. The contract for the works has been carried out by Mr. Cock, jun., of South Molton; that for the stonework by Mr. J. Pulsford, of Barnstaple. The outlay is about 900*l.*

South Kirkby (*Yorkshire*).—This very interesting old church, dedicated to All Saints, dating from the thirteenth and fourteenth centuries, after its re-arrangement and refitting, was re-opened on the 28th ult. It consists of a fine tower at the west end, nave of two bays with north and south aisles, chancel with arcade of two small bays, north and south aisles, vestry, and north and south porches. The latter were originally groined. The present arrangement gives seating accommodation for 403, whilst the old pews accommodated about 280, including a gallery at the west end of the nave, which, besides being a great disfigurement, effectually blocked up the tower arch. The gallery has been removed and the tower arch opened out, the ringing-floor being placed at its original level, thereby disclosing the west window over the tower entrance. The whole of the church under seating, &c., was originally paved with stone, and was very damp. This has been taken up, and the whole has been covered with a layer of concrete. The whole of the passages and chancel have been laid with Minton's tiles. The steps are of Robin Hood stone, as also the base of a low stone screen which divides the nave and chancel, the upper part of which is of Ancaster stone. This screen is carried round to form the base of the pulpit. White's wood block flooring has been used under the whole of the seating. The heating is effected by flat hot-water piping, laid level with the floor, and radiators in the chancel aisles, supplied by Messrs. Cameron & Robertson, of Kirkintilloch, near Glasgow. The whole of the interior stonework has been cleansed of all paint and whitewash. The nave roof has been re-covered with new lead, the old lead roof being much oxidised, and unfit for further use. The work has been carried out by Mr. William Anelay, of Doncaster, the plumbing work being done by Messrs. Tasker, of South Kirkby. The cost of the whole has been about 1,000*l.* The architects are Messrs. Oswell & Blake, of London.

Stalbridge (*Dorset*).—The Church of St. Mary has been re-opened for service, after extensive restoration and additions. It is a very quaint church, in the Perpendicular style, and dates back to the fifteenth century. The cost of the restoration has been 2,500*l.* Mr. T. H. Wyatt is the architect, and the work has been executed by Mr. W. H. Miles, for the firm of Messrs. L. Miles & Son, of Shaftesbury.

Garway.—This church, situate on the banks of the Monnow, close to the borders of the counties of Hereford and Monmouth, has been reopened. A new vicar, the Rev. J. Jones, has recently been appointed, who has set himself the task of effecting a complete restoration of a church which the Bishop of Hereford described, "without fear of contradiction," as one of the most curious and interesting to be found in the West of England. The fine Norman tower, 27 ft. square, is detached, and there is much excellent work of the twelfth, thirteenth, and fourteenth centuries about the church. The stone altar, with five incised crosses, remains *in situ*, and the rood-loft steps are intact, while the open seats of massive oak have ends 4 in. in thickness. The architect engaged in the restoration is Mr. E. H. Lingen Barker, and the contractor for the works just executed was Mr. W. Balcombe, of Kenilworth.

EMMANUEL CHURCH, FOREST GATE.

THIS church, which has been undergoing enlargement, has just been re-opened. The bishop of the diocese (St. Alban's) preached at the opening service, and was highly gratified with the successful result achieved. The building, which is in the Decorated style, was one of the late Sir Gilbert Scott's early works. It was originally designed as a village church, but the very rapidly growing neighbourhood demanded increased accommodation, and the work which has been carried out is part only of a larger scheme.

A new aisle and vestry have been added on the south side, and the chancel has been thrown open by means of arches. The organ, which formerly blocked up the east window of the north aisle, has been removed to the south side of the chancel; and a portion of the north aisle, previously screened off as a vestry, has been thrown into the church.

The work has been carried out by Mr. Gibbons, of Buntingford, at a cost of 1,040*l.* The carving has been executed by Mr. Hearn, in a highly satisfactory manner. The architect engaged was Mr. George McDonell.

SEWERAGE OF BERLIN.

SIR,—Seeing from the reports in the *Builder* and the *Sanitary Record* of the meeting of the Institution of Surveyors that Mr. Mechi is stated to have said,—"The whole city of Berlin had been sewered by English engineers, Messrs. Aird," I hasten to correct this.

The Berlin works have been projected and carried out solely by the Royal Baurath Hobrecht. We have been engaged in laying the main pipes from the town to the irrigation fields, and also in connecting the houses with the sewers, but the whole of the five sewer systems, with pumping-stations, laying out of the irrigation fields, &c., have been carried out (chiefly in day-work) by and under the immediate superintendence of the Baurath Hobrecht.

Danzig. A. AIRD.

Books Received.

Health Primers. London: Hardwicke & Bogue. 1878.

UNDER this title a series of little books are in course of publication, which bid fair to be very useful. We have before us four of them, "The House and its Surroundings," "Alcohol," "Exercise and Training," and "Premature Death: its Promotion and Prevention." Although necessarily brief, they contain a considerable amount of condensed information, and are the work of men who know what they are about.

VARIORUM.

"REVIVED Guild Action: Suggestions to the Worshipful Company of Plumbers," by George Shaw (Pardon & Son), is a worthy attempt to induce that Company to confer the membership of it, as a premium and diploma, to craftsmen who prove themselves deserving of it. Mr. Shaw shows what was originally the purpose of the guild, and the importance at the present time of obtaining a supply of properly-trained plumbers. It is a valuable effort.——The paper on "The Electric Light," read by E. Conder, jun., at an ordinary meeting of the Engineering Society, King's College, London, has been published (office of the *Freemason*). It gives a pleasant account of what has been done and what is promised. The writer, still a student, is the son of Mr. Edward Conder, builder, president of the Builders' Benevolent Institution.——"Bad Trade," by Edwin Guthrie (Ireland & Co., Manchester), is a pamphlet which may be usefully read just now. This one paragraph will show its tone and object:—"Over-production has never overtaken us yet, and it never will. Because production is the creation of wealth, and we cannot be poorer because of the superfluity of our riches. The assertion of the contrary, which has become so common lately, is a glaring paradox."——We need only mention that "The City Diary" is published for 1879, and is as usual interleaved with blotting-paper, and has money columns.——"The Cosmopolitan Masonic Calendar" for 1879 (Geo. Kenning), contains a large amount of information, which must be very useful to members of the craft.——We have no hesitation in recommending "Calvert's Mechanics' Almanack and Workshop Companion" for 1879, to those for whom it is intended. Much may be learned from it.

Letts's Publications.

We may safely say from what we see that such of our readers as require a pocket-book, almanac, or diary, will find among Messrs. Letts's exactly what they want, both as to size andscope. The No. 8 diary, which gives a page (small 8vo.) for each day, is a capital little book for those who keep records of their thoughts or doings. Letts's "Weekly Diary and Blotting-pad" is a novel combination; and amongst minor facilities offered by the firm, we particularly recommend their labels, adhesive and otherwise.

Miscellanea.

An Abortive Drainage Scheme.—On the 4th inst. Col. Ponsonby Cox attended at Ribchester, near Blackburn, to hold an inquiry into an application the Preston Rural Sanitary Authority desired to make to borrow 1,000*l.* to drain Ribchester. It was stated that the township was not drained at all at present, and that it had lacked in this important particular for many years. The proposal was to allow the drainage of the district to fall into the river Ribble by gravitation at two points named in the plan presented. There were 158 houses in the district, one half composing the village, and the other half consisting of detached and semi-detached residences. The township contained 1,329 inhabitants, and it had an area of 2,127 acres, its rateable value being 4,205*l.* The estimate for the improvement was,—pipes and laying them, 780*l.*; gullies, 80*l.*; ventilators for the sewers, 37*l.* 10*s.*; and contingent expenses, 40*l.*; total, 936*l.* Colonel Cox said the rate to be levied for this sum would be 7d. in the pound on property, and 1¾d. on land. Dr. Spencer, medical officer, said that in the report which he made in February last, he pointed out to the Local Government Board that the discharge of sewage into the Ribble was contrary to the Rivers Pollution Act, but that owing to various causes he thought that the Local Government Board might allow the sewage to flow into the river, and thus minimise causes of epidemic diseases. The report was sent to the Local Government Board, and had not been replied to; hence they inferred that the suggestion was approved. Colonel Cox said that surely they must know that the Local Government Board had no power of altering Acts of Parliament, and the London authorities never conceived that it could be thought so. The inquiry thus ended in the collapse of the scheme.

Trees in Streets.—A very important advance in street architecture may be hoped for as the result of a favourable recognition of trees as proper inhabitants of cities. In narrow streets, high-class architecture is crushed out of sight; it is a waste of money to pile up a fine façade where it cannot be seen, and, moreover, the architecture of a narrow street ought to be as flat as possible, because the fine shadows that are characteristic and expressive of good work become evils where light is scarce, though so desirable where there is proper space for a dignified display. We are too much tied up to certain tame styles that reflect but too faithfully only degeneracy in matters of taste, and hence it is that the average Englishman experiences a succession of surprises in visiting first-class Continental cities; and, of course, when he returns home, he asks, "Why cannot we make our cities beautiful?" Well, the answer is, that we can if we like. The reason we have been content with organised dreariness is because we have been deficient of taste and public spirit; and in London the case has been aggravated by the fact that there was no local government, and even now there is not such a local government as is needed for the administration of the largest cluster of houses in the world.—*Gardeners' Chronicle*.

The Ebbw Vale Waterworks.—At a meeting of the Edinburgh and Leith Engineers' Society held on the 4th inst., a paper was read by Mr. John C. Mackay, C.E., on the Ebbw Vale Waterworks. It was stated that the depth of the reservoir at its deepest part is 48 ft., and that it had a capacity of 61,000,000 gallons, giving 18 gallons per day to 20,000 people for 104 days, besides allowing compensation to the river Ebbw. The total cost of the reservoir, two filter-beds, tank, &c., was 25,000*l.*; and the necessary fittings and pipes for distributing the water came to about 6,000*l.* more, thus bringing the entire cost of the whole work to 31,000*l.*, representing 516*l.* per 1,000,000 gallons, or 10*s.* 4d. per 1,000 gallons storage.

A Landslip occurred on Monday, in connexion with the new dock extension works at Devonport Dockyard. Mr. Pethick, of Plymouth, is the contractor. The result of the present accident is the immediate stoppage of all work, for a mass of rock, 250 ft. long, 12 ft. wide, and 30 ft. deep, equal to 90,000 cubic feet, has shifted from its proper position, carrying with it a great deal of masonry and destroying building material valued at several thousand pounds. The main road round the dock also shows a considerable fissure.

A Manchester Publisher.—The premises which were occupied by Mr. John Heywood, bookseller and publisher, at the foot of Brasennose-street, have been swept away, and the business transferred to a handsome building which Mr. Heywood has just had erected in Ridgefield. The building has been specially constructed for the purposes of the business; has side entrances in John Dalton-street and Mulberry-street. It has a sub-basement, a basement, and six floors above, covers 900 square yards of ground, and has a floor area of 6,450 square yards, or nearly two acres. The appliances with which the building is fitted are of the most approved order: hoists, lifts, and such conveniences are to hand wherever they are needed; and so they had need be. The ordinary sale of school-slates at this one establishment now reaches a weekly average of nearly five tons; 175,000 slate-pencils accompany them, while 5,000 penny bottles of ink, and about 2,000 similar bottles of gum, leave this department during each week of the year. From the basement all the orders to London publishers are despatched, and the parcels for country booksellers made up. The former occupies, exclusively, the attention of a dozen clerks; the latter is a subject of some interest as to detail. The introduction of many new card-games has greatly increased the sale of all classes of cards, including the ordinary playing-cards, and from this one establishment alone there is now an annual sale of about 4½ tons in weight, representing over 30,000 packs, to say nothing of the sale of books and periodicals. Over half a million envelopes and ten tons weight of note-paper, made up into packets or in sheets, are weekly forwarded from the department having control of that branch of the trade. Such, in brief outline, is the work of a firm which finds employment for 270 workpeople, receives a thousand letters a day (more than any other Manchester firm), and posts them daily in sackfuls. Over 2,000 parcels are despatched from the warehouse daily, and about 1,000,000 newspapers and periodicals pass through the hands of the firm every week, this department alone finding employment for 110 persons, and twenty-five vehicles being used for the delivery of parcels to town newsagents and the various railway stations.

The Cathedral of Nicosia.—Mr. Hepworth Dixon is contributing an interesting series of letters from Cyprus to the *Portsmouth Times*. We take a paragraph from that paper of the 7th inst.—"The second quarter (that of the north-east corner), the most secluded, garden-like bit of Nicosia, holds the main architectural feature of the town, the great mosque, once the cathedral of Santa Sophia, in which all the Anglo-Norman kings were crowned. As the kings of Castile saved the mosque of Cordova, and the Popes of Rome saved the Pantheon, from the zeal of their disciples by consecrating them to the new worship, the Ottomans saved what siege and storm had left of the cathedral of Nicosia by turning it into a mosque. Under the shadow of the mosque at Nicosia stands the wreck of a Crusaders' church, now called the Betestan, and let out to a merchant as a granary of wheat. Enclosed by the usual courtyard, the mosque has the customary well and fountain, with the ever-flowing water for cleansing hands. An air of rest and mercy reigns within this court. An imaun leads you through the mosque and to the minaret, from which you gain a splendid view of the great plain and the enclosing mountain ridges. Other mosques within the walls have names, as, for example,—Serai mosque, Arab mosque, Ahmed Pasha mosque, and Omer mosque; but not the edifice-in-chief. Santa Sophia is the mosque, just as Westminster with ourselves was always the Abbey, even when London had a score of cloisters, with orders of friars from black to white. Not far from Santa Sophia stands the mosque of Haidar Pasha, once a Latin church, dedicated to Santa Catarino, afterwards spoiled by Cypriote fanatics, and saved from destruction by the Turks. This second quarter of Nicosia will remain the residence of Turks."

Irrigation: Leyton.—At a meeting of the Leyton Local Board, held on Tuesday, the 10th of December, a resolution was passed, appointing Messrs. Bailey-Denton, Son, & North, engineers to the Board for the preparation and carrying out of a complete system of sewerage and sewage disposal for the district. At Halstead, Essex, the same firm have been called in

The Electric Light on the Thames Embankment and Holborn Viaduct.—On Saturday evening ten out of the twenty electric lights which the Metropolitan Board of Works have ordered to be exhaustively tested on the Victoria Embankment were lighted for a couple of hours experimentally, prior to the full number being commenced on Monday. The preliminary operations were under the superintendence of M. Berly, the electrician to the Société Générale d'Électricité, of Paris, who supply the electric machines and fittings, and the three months' experiment will be crucially tested photometrically and economically as compared with gas by Mr. Keates, the chemist to the Board. The engine, — a semi-portable locomotive, by Ransome, Sims, & Co., of 20-horse-power nominal,—and the machinery employed in the production of the light, are housed in a wooden shed by the side of the Charing-cross Railway Bridge. The system employed is that of the Jablochkoff candle. On Saturday evening also the experiment which the Corporation of the City of London have ordered to be carried out at the Holborn Viaduct during the winter was commenced. Sixteen lamps are to be tested under the supervision of Colonel Haywood, and no doubt as rigorous a watch will be kept, scientifically and economically, on the results as in the case of the Metropolitan Board of Works. This experiment is also on the Jablochkoff system. The arrangements for the Viaduct are similar to those at the Embankment; a 20-horse-power semi-portable engine, by Robey & Son, and the electrical machinery, being housed in a wooden shed on a vacant plot of land on the west side of Farringdon-street.

The Railway Passenger Duty.—The Travelling Tax Abolition Committee have addressed a letter to Lord Sandon, the new President of the Board of Trade, calling on him to bring in a Bill for the rectification of the railway passenger duty. They tell him that, for thirty years the spirit of the Cheap Trains Act, which was passed for the protection of "the poorer class of travellers," was properly carried out by the judicious interpretation of the Board of Trade, who certified for the exemption from duty the penny a mile fares of all trains which aided in carrying out the objectof the Act, which was that passengers might every day be able to travel from any one station to any other station on the line at a penny per mile. The Court of Exchequer has decided that no exemption can be claimed by any train that does not go from one end to the other of a trunk, branch, or junction line, and stop at every intermediate station to set down and take up passengers at a penny per mile. The committee show that this decision, though it may be technically correct, is contrary to the spirit of the Cheap Trains Act. The Board of Trade have stated in reply, that the committee's letter has been fully considered by them, and that in view of the fact that any legislation in the direction urged by the committee must affect the Exchequer, they have forwarded a copy of the statement, together with the committee's "Gazettes" of April and September last, to the Secretary of the Treasury, in order that the same may be laid before the Lords Commissioners of her Majesty's Treasury.

New Promenade and Sea-wall at Bridlington Quay.—In reply to the offer of 20*l* for the best plan and report thereon for erecting sea defences between Sand's-cut and Sand's-lane, five sets of plans and reports have been received, and such plans having been examined, the committee resolved that the Board be recommended to award the premium of 20*l*. to Messrs. Clarke & Pickwell, civil engineers, Hull, for their plans and report thereon for erecting such sea defences. The Board adopted the report. It was also resolved that application be made to the Public Works Loan Commissioners for a loan of 5,000*l*. to carry out the sea defences from the Sand's-cut to the boundary of the district of the Board. The Board have obtained the conveyance of 45,000 ft. of land, comprising a strip 45 ft. wide, extending the whole length of the works above referred to.

The "Secure" Sash-Fastener.—Evered & Clarke's patent "Secure" Sash-Fastener, a view of which may be seen in our advertising columns, is certainly superior to the ordinary run of sash-fasteners. It cannot be opened with a knife or other instrument from the outside; it locks the two sashes together and prevents all noise of rattling sashes; and it is not dearer than the ordinary insecure fastenings.

The Nave Roof, St. Alban's Abbey.—At a meeting of the Restoration Committee, held in St. Alban's on the 13th inst., the roof question was again discussed. There were present the Earl of Verulam (in the chair), the Ven. Archdeacon Grant, Rev. Canon Davys, Rev. W. J. Lawrance (rector), Sir E. Beckett, bart., Q.C., Mr. R. Pryor (chairman of Quarter Sessions), Mr. H. J. Toulmin (secretary), &c. The committee had before them the resolution passed at the recent meeting of the Society of Antiquaries, and also heard a paper read by Mr. J. O. Scott, the architect, and then resolved "That it is inexpedient to re-open the question of the roof of the nave; and that the architect be requested, in constructing the new roof of the nave, to retain such portions of the ancient roof as may be found sound, on condition that the necessary funds are furnished by Lady-day next." It is stated that "a gentleman much interested in the adoption of the high-pitched roof" has "promised to find nearly all the funds required for the woodwork," and it now only remains to pay for the deficiency of lead needed to have the roof covered with that material. In consequence of the determination of a majority of the committee to persist in having a high-pitched roof, two members have withdrawn.

The Telephone in America.—The Bell Telephone Company, according to the *Electrician*, has placed on the market about 20,000 telephones, and is now making over 400 per week. "Telephones were first used only on private lines; but, in the spring of 1877, Mr. Coy, of New Haven, Agent of the Bell Telephone Company, devised the exchange system. Lines radiate from a central office to the houses and offices of the subscribers; and subscribers put in connexion through the central office with any other subscriber can at pleasure carry on private conversation. The great advantages of such a system are evident on slight examination. It has already been introduced into all the principal cities of the country, and is destined to produce a great change in the method of doing business in cities, as the telegraph has between more distant points. Many private lines of ten, fifteen, and twenty miles in length are already in operation, and there seems to be no practical difficulty in connecting, by telephone lines, places several hundred miles apart. The highest award, with the grand prize, at the Paris Exhibition was given to Professor Bell as the inventor of the articulating telephone."

Ventilation.—At the *soriée* of the Leeds Philosophical Society, a patent for ventilating houses and workshops was exhibited by Messrs. A. R. & J. W. Harding. For the admission of fresh air and its diffusion in a room without draughts, an opening or air-passage is formed from the exterior to the interior of the apartment, and inside the room the opening is covered with a box or chamber. This is perforated with any required number of holes or slots, these having a diagonal upward direction. In order to properly diffuse the air, hollow ferrules or tubes of any desired length are fitted into the holes or slots provided in the box. These ferrules or tubes give the desired direction to the various streams or jets of air, in the same manner as the barrel of a rifle or gun gives direction to projectiles, and the elevation of the mouth or outlet of each ferrule or tube varies the trajectory or line of delivery in the same manner as the elevation or depression of a rifle or gun. The box or chamber is of a conical or pyramidal form, so as to give direction to the ferrules or tubes. A stop-valve is employed for regulating the supply of air.

Proposed New Vestry Hall and Public Baths and Wash-houses for Clerkenwell.—A proposal is before the Clerkenwell parochial authorities for the erection of a new vestry-hall, and also public baths and wash-houses within the parish. The subject was discussed at the last meeting of the vestry, when it transpired that the Clerkenwell workhouse, the freehold of which is the property of the parish, will shortly be vacated by the opening of the new infirmary at Highgate, and Mr. Brookes proposed that either a new vestry-hall or public baths and washhouses should be erected on the site. The discussion was ultimately adjourned.

"Restoration of Ancient Buildings."—We postpone continuation of report of proceedings at the recent meetings in Liverpool that we may have space to print some of the papers that were read.

Books.—At the sale of a Library just concluded by Messrs. Puttick & Simpson, of Leicester-square, Ruskin's Seven Lamps of Architecture brought 8*l.* 5s. (Feetham); Ruskin's Modern Painters, 5 vols., 45*l.* (Parkinson); Ruskin's Stones of Venice, 3 vols., 18*l.* 10s. (Parsons); Ædes Althorpianæ, 2 vols., 7*l.* 10s. (Beet); Boccace, Le Decameron, 5 vols., 12*l.* 15s. (Harrison); La Fontaine, ses Fables, 6 vols., with numerous additional plates, 26*l.* (ditto); Saint-Pierre, Paul et Virginie, with extra plates, 3 vols., 39*l.* (ditto); Zoological Society of London, Proceedings 1848 to 1877, 13 vols., 22*l.*; Bewick's History of Birds and Quadrupeds, 3 vols., 18*l.* 10s. (Hayes); Bewick's Select Fables, 12*l.* 15s. (Pickering); Bewick's Fables of Æsop and others, 12*l.* 10s. (Parsans); Lyson's Magna Britannia, 6 vols., 22*l.* Ellis & White); Art-Journal from 1845 to 1878, 34 vols., 26*l.* (Marsden); Turner's Picturesque Views, 2 vols., 16*l.* 5s.; Claude's Liber Veritatis, 3 vols., 16*l.* 15s. (Hayes); Chippendale's Gentleman's and Cabinet Maker's Director, 13*l.* (Kerslake).

Bristol Industrial Dwellings Company. The annual meeting of the Bristol Industrial Dwellings Company, Limited, was held on the 13th inst. The chairman (Mr. W. H. Budgett) stated that, notwithstanding the depression of trade, the directors were enabled to propose that a dividend of 3*l.* 10s. per cent. should be declared, and that a balance of 16*l.* 18s. 4d. be carried forward to the reserve fund. The report stated that 6,600*l.* had been taken up in shares towards the new block of buildings, which was fast progressing towards completion, and that the directors hoped a few more shares would be subscribed for, so that the building might be completed without any debt whatever. The chairman said he was glad to find that the buildings were as popular as ever, and he saw no reason why the dividend next year should not be greater. He added that Miss Winkworth still continued to give her valuable superintendence, and that the tenants at the present time paid their rent regularly, and were quiet and orderly. The report was unanimously adopted.

Mr. Di Cesnola and Cypriote Antiquities.—In the House of Commons, on the 12th inst., Sir C. Dilke asked the Under Foreign Secretary whether, in October last, Mr. Di Cesnola, an American citizen, was tried for an offence against Turkish law in digging up objects of antiquarian interest without a firman, by the district court of Larnaca, in Cyprus; whether the court was presided over by a Turkish cadi, assisted by an English assessor; whether Mr. Di Cesnola was sentenced to a fine, afterwards remitted by Sir Garnet Wolseley, and the confiscation of the objects found pronounced by the court; whether the latter portion of the judgment was carried into effect; whether any protest was made by Mr. Di Cesnola against the jurisdiction of the court, &c. Mr. Bourke replied that it was true that Mr. Di Cesnola was so tried, that he was sentenced to a fine, afterwards remitted, and that the objects found were confiscated. It was true also that Mr. Di Cesnola protested.

The New Law Courts.—It is worthy of note that no designation has yet been authoritatively settled for the structure which is to afford accommodation for all the divisions of the High Court and the Court of Appeal, and it is greatly to be feared that, after our usual fashion, we shall drift into some unmeaning and unworthy name. In the draft of some general orders not yet promulgated we have observed that the building is spoken of as "The New Law Courts." It is to be regretted that a designation which would so soon cease to be appropriate should be attached to the structure. If "Palace of Justice" is too high-sounding a name, why not call the building the "Supreme Court House?" Or, if that is still too grand, "The Law Courts" would be better than "The New Law Courts."—*Solicitors' Journal.*

Military Brigade Depot.—We understand that the new military centre at Hounslow (which may be classed among the largest in the kingdom), is now rapidly approaching completion. The works, begun originally by Messrs. Niblett & Son, Hornsey, have been carried out by Messrs. Downs & Co., of the Borough, under the direction of Major Montmorency, R.E., the foreman of works being Sergeant-Major Hamilton, R.E. All the locks, latches, and door furniture for upwards of 600 doors have been supplied by Mr. James Hill, of Upper Thames-street.

On Herren-Chiemsee, an island beautifully situated in Lake Chiem, the king of Bavaria has laid the foundation of a palace to be built somewhat on the model of that of Versailles. The chief materials of which the building is to be constructed are ordinary bricks, which have to be brought from some distance. About 300 workmen are at present engaged on the work; but so vast is the extent of the proposed structure that it is not expected to be completed before the lapse of fifteen years, if the plan, which is for a palace as extensive as that of the royal residence at Munich, is fully carried out. The estimated cost of the building is no less than 36 million marks, equal to 1,800,000*l.* sterling.

Society of Engineers. — At the annual general meeting of this society, held on the 9th inst., Mr. Robert P. Spice was elected president (for the second time), and it was announced that the following premiums had been awarded by the council for papers read during the year, viz., to Mr. Henry S. Copland, for his paper on "Modern Roadway Construction," and to Mr. George G. André, for his paper on the "Application of Electricity to the Ignition of Blasting Charges." Votes of thanks were accorded to the honorary secretary, Mr. Alfred Williams; to the acting secretary, Mr. Perry F. Nursey; and others.

The Thames Valley Drainage. — At a meeting of the Lower Thames Valley Main Sewerage Board, at Kingston, the City Solicitor (Mr. T. J. Nelson) in the chair, the Special Drainage Committee reported that they had taken the necessary steps for obtaining an Act of Parliament to carry out Col. Haywood's scheme. They also recommended that Col. Haywood and Messrs. Bailey-Denton, Son, & North, and Mr. Mansergh, should receive 200 guineas each as authors of the three schemes for disposing of the sewage which appeared to offer the best prospect of success.

Death of Mr. Henry Dawson.—Mr. Henry Dawson, sen., the well-known artist, died on the 13th inst. at Chiswick, aged 67. Mr. Dawson, in early life, was employed as a "hand" at a lace manufactory at Nottingham, his native town, and devoted his leisure to landscape-painting, being entirely self-taught. Unceasing devotion to his profession brought him fame, and a room was specially allotted to his pictures in the exhibition opened at Nottingham Castle, in July, by the Prince of Wales.

The Building Trade at Oxford.—A threatened strike in the building trade at Oxford has been averted. The master builders of the city met a deputation of carpenters in the City Buildings, and, after some discussion, it was agreed that the wages should be reduced from December 28th next. A set of rules was drawn up and also agreed to, by which, for the future, it will be necessary that six months' notice shall be given on either side before any alteration takes place.

Projected Tramways in Chelsea.—We are glad to find that the surveyor to the Vestry, Mr. G. H. Stayton, C.E., has advised his vestry to oppose the whole of the schemes; the roadways being altogether unsuited to the projected tramways. If they should be admitted to the Fulham-road, enormous injury would be done to the neighbourhood.

Cost of the Electric Light.—The most valuable statement yet printed, all to nothing, on the electric light, with special reference to the expenditure likely to be incurred by those towns which adopt it, is an "Interim Report" on the subject, presented to the town council of Liverpool by the borough and water engineer, Mr. G. F. Deacon, C.E.

The Royal Academy of Arts.—The students of the Royal Academy of Arts held their annual dinner (in celebration of the distribution of prizes) at Frank White's Hotel, Swallow-street, Piccadilly, Mr. J. Ballantyne, R.S.A., curator of the School of Painting, presiding.

Fire.—On Wednesday morning the Basin Sawmills, near Exeter, where some large Government and railway contracts were being carried out, were destroyed by fire. The damage is estimated at from 6,000*l.* to 8,000*l.*

Halifax School Board Competition. — 187 architects have applied for the particulars in this competition!

TENDERS

For the erection of an eight-roomed house at Leytonstone, Essex. Mr. R. Griggs, architect:—

Arber	£744	0	0
Wood	720	0	0
Tillett	708	0	0
Cains	700	0	0
Sayer	630	0	0

For additions to Wey-gate, Guildown, Guildford:—

Mitchell, Brothers	£590	15	9
Smith & Sons	570	0	0
Nye	540	0	0
Goddard & Sons	524	0	0
Colls & Sons (accepted)	520	0	0

For alterations and additions for Messrs. S. Mordecai & Co., 108, Mile End-road. Mr. Hall, surveyor:—

Sampson & Parrish (accepted)	£213	0	0

For new brick water-dam, with wrought-iron flood-gates, &c., on the river Tame, near Weston, Oxon, for Alfred Howland & Co. Mr. H. J. Heath, architect:—

Barton (accepted).

For alterations and fittings at the Ship and Blue Coat Boy, Walworth-road, for Mr. Edward Smith. Mr. James Joy, architect:—

Whitby (accepted)	£440	0	0

For the erection of the Congregational Chapel, Newport, Essex. Mr. C. Pertwee, architect:—

Lindall	£1,614	0	0
Dix	1,168	0	0
Cornwell	1,156	0	0
Staines	958	0	0

For laying-out the New Market, and approaches, Chelmsford, for the Local Board of Health. Mr. Charles Pertwee, surveyor:—

Levelling, Draining, Roadmaking, &c.

Wood	£878	0	0
Ford & Norris	799	0	0
Walker	655	0	0

Curbing, Paving, Masons' Work, &c.

Choat & Son	£1,133	10	0
Hardy	1,117	4	6
Rutty	960	0	0
Finnegan	900	0	0
Wray	866	0	0

Water-mains, Iron Fencing, Smith's Work, &c.

Green & Burleigh	£2,193	0	0
Cottam & Co.	1,352	10	0
Beckett Bros.	1,337	0	0
Hill & Smith	1,183	0	0
Fletcher	1,037	10	0

Builder's Work in Settling-house, Sheds, &c.

Wood	£587	0	0
Gozzett	541	0	0
Byatt	469	0	0
Choat & Son	442	0	0

For additions to Christ Church, Chislehurst. Mr. Alfred R. Pite, architect:—

	Northern Extension.	Western Extension.
Patman & Fotheringham	£2,630	£2,915
Smith	2,802	2,908
Burkitt	2,722	2,850
Downs	2,775	2,710
Falkner	2,667	2,633
Payne & Balding	2,733	2,610
Harris & Wardrop	2,685	2,535
Stickland Bros.	2,782	2,520
Crowland Bros.	2,424	2,505
Tongue	2,315	2,105

For taking down and rebuilding premises at Bovey Tracey, Devon, for Mr. John G. Beer. Mr. John M. Pinn, architect. Quantities supplied:—

Stephens & Son	£1,728	0	0
Davis Bros.	1,215	0	0
Stacey & Rabbage	1,180	0	0
Underhill & Aggett	1,178	0	0
Mardon	1,120	0	0
Palfry & Sly	1,110	0	0
Colling & Son	1,082	12	0
Tapper	1,010	0	0

For dwelling-house and butcher's shop at Arnold, near Nottingham, for Mr. George Dean. Mr. Herbert Walker, architect. Quantities supplied:—

Wilson & Bulling	£763	5	0
Baldwin & Bellamy	745	0	0
Dudson & Parrish	712	0	0
S. & J. Cargill	705	0	0
Scott	699	0	0
Slim	690	0	0
Wood	670	0	0
Franks	670	0	0
Mosley	668	0	0
Stainforth	664	4	0
Baines & Burton	645	0	0
Clayson & Mould	640	0	0
Smith & Greaves	630	0	0
Wayte	629	18	6
Crookes & Foster	624	0	0
Doughty	620	0	0
Noble	588	0	0
Tutin	580	0	0
G. & J. White	525	0	0

For the erection of new granaries, stabling, &c., in the Coombe-road, for Mr. C. Andrews. Mr. Henry W. Beale, architect:—

Pleece (accepted, labour only).

For new stabling, coach-house, &c., Burlington-road, Mr. Henry W. Beale, architect:

Drewitt (accepted).

For altering and adding to Mr. Eddowes's premises, 217, Old Kent-road. Mr. J. W. Brooker, architect:—

Weekes	£1,050	0	0
Sharpley	1,007	0	0
Cullum	872	0	0
Battley (accepted)	785	0	0

For finishing ten houses at Hounslow, for Mr. W. Schofield. Mr. J. W. Brooker, architect:—

Bartlett	£4,500	0	0
Longman	4,500	0	0
Vincent	4,365	0	0
Sanders	3,898	0	0
Simmons & Co.	3,935	0	0
Battley	3,900	0	0
Priddle	3,800	0	0
Cullum	3,990	0	0

For alterations at Mr. Bellringer's premises, 59 and 61, Newington-causeway. Mr. J. W. Brooker, architect:—

Colls	£1,050	0	0
Hockley	912	0	0
Cullum	905	0	0
Battley	875	0	0

For the erection of a warehouse, High-street, Shoreditch, for Messrs. E. Levy & Bros. Mr. J. W. Brooker, architect:—

Battley	£3,760	0	0
Forrest	3,446	0	0
Axford	3,385	0	0
Thompson	3,368	0	0
Morter	3,360	0	0
Lawrance	3,295	0	0
Cullum	3,248	0	0
Ashby, Bros.	3,129	0	0
Colls & Sons	3,087	0	0
Crockett	3,068	0	0
Browne & Robinson (accepted)	3,018	0	0

For the erection of the Swan Tavern, Sclater-street, E., for Mr. J. Grey. Mr. J. W. Brooker, architect:—

Ashby & Brothers	£3,100	0	0
Axford	3,055	0	0
Wagner	3,020	0	0
Browne & Robinson	2,990	0	0
Lawrance	2,980	0	0
Chessum	2,938	0	0
Grover	2,894	0	0
Morter	2,873	0	0
Crockett	2,778	0	0
Elkington	2,760	0	0
Battley	2,685	0	0
Cullum	2,550	0	0
W. & F. Croaker (accepted)	2,495	0	0

For stonework and fixing of the Green Dragon, Bishopsgate, for Mr. W. Chapman. Mr. J. W. Brooker, architect:—

Plows	£244	0	0
Seale (accepted)	215	0	0
Schofield	210	0	0
Perriman	175	0	0

For the erection of a villa in Wickham Park, Brockley, for Mr. F. H. Leaver. Mr. J. W. Brooker, architect:—

W. & F. Croaker	£3,259	0	0
Battley	3,100	0	0
Spillane	3,058	0	0
Grover	3,058	0	0
Crockett	2,900	0	0
Jerrard	2,777	0	0
Cullum	2,698	0	0
Redman (accepted)	2,425	0	0

For the erection of two villas in Grove-hill-road, Denmark-hill. Mr. J. W. Brooker, architect:—

Cullum	£1,400	0	0
Battley	1,250	0	0
Kingsman (accepted)	1,125	0	0

For the erection of a warehouse and factory, for Mr. W. H. Vaughan, in rear of 332, Old-street, E.C. Mr. J. W. Brooker, architect:—

Morter	£2,226	0	0
Browne & Robinson	2,179	0	0
Axford	2,125	0	0
Crockett	2,122	0	0
W. & F. Croaker	2,038	0	0
Downs	2,015	0	0
Lawrance	1,985	0	0
Cullum (accepted)	1,932	0	0

For villa residence, Chalcots, Haverstock-hill. Mr. R. Groom, architect:—

Nash (accepted)	£1,616	0	0

For alterations and additions to the Builders' Arms, Charles-street, Kensington. Messrs. Bird & Walters, architects:—

Mark	£1,155	0	0
Braid & Co.	1,150	0	0
Grimwood & Sons	1,110	0	0
Williams & Son	1,083	0	0
Godden	1,035	0	0
Hockly	1,005	0	0
Anley	870	0	0

For porter's lodge at the School for Imbecile Children, Darenth, Kent, for the managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, architects:—

Braid & Co.	£600	0	0
Gumbrell (accepted)	420	0	0

For schools for the Ashford School Board, Mr. J. T. Hansom, architect. Quantities by Mr. Clement Dowling:—

North Bros.	£5,350	0	0
Reading	4,990	0	0
Wood	4,774	0	0
Beale	4,627	0	0
Prout	4,585	0	0
Hughes	4,455	0	0
Petts	4,400	0	0
Knock	4,364	16	4
Knight	4,327	0	0
Jones	4,261	0	0
Bourne	4,250	0	0
Denne	4,150	0	0
Denne	3,994	0	0
Steddy & Co.	3,980	0	0
Adcock	3,674	0	0
Howler	3,437	0	0

For alterations and additions to the George and Dragon, No. 2, Hackney-road. Messrs. Bird & Walters, architects:—

Mark	1,517	0	0
Braid & Co.	1,500	0	0
Stamp & Bowtle	1,439	0	0
Williams & Son	1,383	0	0
McLachlan	1,348	0	0
Hockley	1,345	0	0
Marr	1,343	0	0
Forrest	1,287	0	0
Anley	1,253	0	0

For the first portion of Terrace Wall, England's-lane, N.W. Mr. R. Groom, architect:—

Nash (accepted)	£345	0	0

For re-building No. 2, Serle-street, Lincoln's-inn-fields; exclusive of party walls. Mr. R. Groom, architect:—

Staines & Son	£966	0	0
Nash	900	0	0
Howse (accepted)	785	0	0

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